



# ENERGY STAR<sup>®</sup> Consumer Products

## *Market Progress Evaluation Report*

*prepared by*

**KEMA**

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This document is the executive summary of the first Market Progress Evaluation Report (MPER 1) for the Northwest Energy Efficiency Alliance's (Alliance) ENERGY STAR® Consumer Products project. The project officially launched in early 2004 and was recently extended through 2006. The report documents the results of evaluation activities conducted from September 2004 to May 2005. The second phase of evaluation activities that will support MPER 2 will be initiated in September 2005. A third MPER will document the project's final accomplishments in early 2007.

## **1.1 PROJECT DESCRIPTION**

### **1.1.1 Background**

The Alliance seeks to make affordable, energy-efficient products and services available in the marketplace. To that end, it supports projects targeted at the residential, commercial, industrial, and agricultural sectors in the Pacific Northwest. This report documents the results of an evaluation of the Alliance's ENERGY STAR Consumer Products project, which, along with the ENERGY STAR Homes Northwest project, comprises the Residential Sector Initiative.

Consumer Products is a continuation of successful regional efforts to promote ENERGY STAR-qualified lighting, appliances, windows, and other home products to Northwest consumers. In the late 1990s, the Alliance launched three residential projects targeting energy-efficient light bulbs, fixtures, and resource-efficient clothes washers. These projects were designed to introduce these products to the marketplace by developing relationships with product manufacturers. The projects included manufacturer financial incentives to increase product availability and reduce product price.

In 2000, the two lighting projects were combined and the clothes washer project was expanded to address dishwashers, refrigerators, and room air conditioners. The project narrowed its focus to ENERGY STAR-rated products and changed its intervention target from manufacturers to retailers. The project provided retailers with salesperson training and advertising and marketing support to encourage ENERGY STAR product promotion and marketplace acceptance. Local utility activities were leveraged and regional and national initiatives were launched to encourage the improvement of ENERGY STAR product quality.

Starting in 2004, all residential project activities were rolled up into the Residential Sector Initiative, which includes the ENERGY STAR Consumer Products project and the ENERGY STAR Homes Northwest project. This umbrella approach to targeting residential products and homes streamlines the Alliance's messaging to partnering utilities and upstream market actors and improves the functional efficiency of project implementation.

The Consumer Products project reflects the culmination of over 5 years of market interventions and market intelligence. As energy-efficient consumer products have moved through the various stages of the adoption process, the project has evolved accordingly to ensure its strategies are cost effective.

### **1.1.2 Consumer Products Approach**

Through this project, the Alliance is implementing a multi-pronged approach for targeted consumer products, with a particular focus on compact florescent lighting (CFL) products and the next-generation of clothes washers—ultra-high-efficiency (UHE) clothes washers.

The project includes a range of market-based activities focused on:

- Improving the quality and consumer acceptance of CFLs
- Generating increased awareness of the higher efficiency clothes washers.

The project provides cooperative marketing opportunities and field services to retailers to leverage the impact of promoting higher sales of ENERGY STAR products to consumers, and coordinates the availability of financial incentives for qualifying products. The project is also coordinated with national efforts, such as ENERGY STAR's Change a Light and Double Your Savings marketing programs, the lighting quality research conducted by the Program for Evaluation and Analysis of Residential Lighting (PEARL), and the work by the Consortium for Energy Efficiency (CEE) to encourage higher ENERGY STAR efficiency levels. Finally, the project supports the advancement of new lighting technologies (e.g., dimmable, reflector CFLs) and supports efforts to encourage the proper disposal of burned-out CFL lamps.

The prime implementation contractor is Portland Energy Conservation Inc. (PECI), with subcontractors Applied Proactive Technologies (APT) and ECOS Consulting. PECI is responsible for meeting the project's goals and leads the "products" component of the project, while ECOS leads the lighting component and APT provides field support for both products and lighting. These three firms have been implementing the Alliance's residential projects since the project's inception, and have developed strong working relationships with the region's market actors and utilities.

### **1.1.3 Market Progress Indicators**

The project has established several market progress indicators for success:

#### ***Lighting Products***

- Increase CFL sales in the Northwest from 750,000 to 1 million annually from the 2003 level of 3.8 million, reaching total sales of 9 million per year by 2010.
- Increase the rate consumers replace expired CFLs with new CFLs from 30 to 80 percent by 2010.
- Increase availability, selection, and affordability of lighting products in the region.

***Clothes Washers***

- Maintain the Northwest's lead over the national average market share for ENERGY STAR clothes washers.
- Achieve annual market share for UHE clothes washers (modified energy factor >1.8) of at least 50 percent of all ENERGY STAR clothes washers by 2007.
- Facilitate adoption of the higher efficiency MEF level (1.8) as the 2007 ENERGY STAR specification.

**1.2 EVALUATION OBJECTIVES AND APPROACH**

The goals of the evaluation are to:

- Measure progress toward overcoming market barriers, leveraging market opportunities, and the product or service becoming sustainable in the marketplace
- Document the project
- Provide ongoing feedback to the Alliance and Project Contractor.

The evaluation approach consisted of the following research activities:

- Project staff interviews
- Assessment of secondary source product sales and market share data
- In-depth interviews with utilities
- Consumer lighting purchaser survey
- Double Your Savings (DYS) ENERGY STAR clothes washer purchaser survey
- Lighting and appliance retail store manager surveys
- Lighting retailer shelf survey
- Clothes washer mystery shopper survey
- Assessment of the project's cost-effectiveness assumptions.

The project staff and utility in-depth interviews, along with the retailer surveys, will be used to document the project's progress to-date and to assess the effectiveness of the project's processes.

### 1.3 CONCLUSIONS

The ENERGY STAR Consumer Products project has met its key lighting and clothes washer goals for 2004, including achieving sales in 2004 of 4.8 million CFLs, and maintaining the Northwest's lead over national average market shares for ENERGY STAR clothes washers. The project has also made progress in improving CFL availability, selection, and affordability and may have mitigated a decline in consumer opinion of CFL quality. Progress towards achieving 50 percent market shares of UHE clothes washers has also been made, yet the ability to track this metric needs to be addressed.

Going forward, the project may need to address the barriers facing CFL non-purchasers in order to meet its long-term CFL sales goals of 9 million by 2010.

#### 1.3.1 ENERGY STAR CFLs

**Goal: Increase CFL sales in the Northwest from 750,000 to 1 million annually from the 2003 level of 3.8 million, reaching total sales of 9 million per year by 2010.**

**Conclusion:** The project has exceeded its 2004 sales goal of 4.8 million CFLs by a wide margin, with over 5 million in CFL sales. Although sales have been strong, consumer survey results suggest the Alliance and regional stakeholders will need to focus on expanding the purchaser base if they hope to continue increasing sales at the rate of 1 million CFLs per year. In order to do so, the Alliance must better understand and address key purchase barriers, including awareness, first cost and lack of information.

**Goal: Increase the rate consumers replace expired CFLs with new CFLs from 30 to 80 percent by 2010.**

**Conclusion:** This evaluation concludes that the Alliance should change this progress indicator to one that better reflects repeat purchase behavior. Currently, CFL removal rates are very low (3% percent of bulbs installed). The reasons for removals suggest that the majority is due to dissatisfaction with the CFLs, so low CFL replacements are not a surprising finding and, more importantly, are not an area for the project to track and to focus its market interventions. However, the rate of removals is worthy of tracking, since it reflects dissatisfaction among current CFL users. We believe that future intentions of replacing burnt-out CFLs with CFLs are a more appropriate indicator of replacement rate, and that the Alliance should track this metric over time. Currently, 75% of CFL purchasers report that they are likely to replace burnt out CFLs with CFLs. We recommend that the Alliance set a goal of 80% replacement rate using this metric.

**Goal: Increase availability, selection, and affordability of lighting products in the region.**

**Conclusion:** CFL availability, selection and affordability have all improved over the last 5 years. Although dimmable and specialty CFLs are now available, the cheapest and most commonly stocked bulb is the small twister style CFL. The other style bulbs and most



higher wattage, specialty and dimmable bulbs are not widely available and are very expensive. Although it was infrequently mentioned as a key purchase barrier in this year's consumer survey, availability/ selection has been cited as a prominent purchase barrier in past surveys and is still an important consideration for continued market growth.

Specific CFL-related evaluation highlights are presented below, with each topic described more fully in Chapter 9 of the report.

### ***Consumer Survey***

The consumer survey focused on recent CFL purchasers to identify their motivations, satisfaction levels, future purchase intentions, and CFL removal behaviors.

- Two-thirds of households reported that they have never purchased any CFLs. One-third of households have never heard of CFLs. The remaining third of households are aware of CFLs but have never purchased them for a variety of reasons, particularly higher first cost and lack of information.
- Satisfaction with CFLs among current users is presently high in the region, and concern about CFL performance is not a significant barrier facing nonpurchasers.
- The ENERGY STAR label has limited influence on CFL purchasers. The impact of the label on the market may be occurring at the retail and manufacturer level.

### ***Lighting Shelf Survey***

The lighting retailer shelf survey was implemented with the intent to characterize the stock of CFLs currently available to the region's consumers in terms of applications, features, wattage ranges, ENERGY STAR qualification, and price. The information gathered allows for tracking of CFL availability, diversity, and price over time. These data represent retailers' stocking patterns and may not be representative of what is purchased. In order to use these data to understand what is being purchased (i.e., in terms of the average price paid by consumers or the most typical model selected by consumers, etc.), sales weights would need to be developed and applied.

- One-quarter of all the bulb shelf space (among stores that sell CFLs in the region) is allocated to CFLs. Chain hardware and mass merchandise stores account for nearly three-quarters of the shelf space dedicated to CFLs in the region.
- CFL bulb diversity is still limited. Twister-style bulbs are the most predominantly stocked CFL bulb type, accounting for 44 percent of all models observed and with 92 percent of stores surveyed carrying at least one twister model. Just over one-third (36%) of twister models are in the 13 to 15 watt range, which typically replace 60-watt incandescent bulbs. In contrast, the next most popular CFL bulb type (reflector bulbs) accounted for less than 10 percent of the models observed, and is carried by less than half the surveyed stores. These results differ by state, with Oregon

maintaining the most diversity of bulbs, followed by Washington, Montana and then Idaho.

- Almost all (88 percent) of the CFL bulbs on retailer shelves are ENERGY STAR labeled.
- On average across all models, CFLs cost about \$7.50, with 5- to 12-Watt twister bulbs costing the least at about \$5 each. CFL prices have fallen by nearly half from 1998, when the Alliance last collected CFL price data from retail stores.

### ***Retailer Survey***

Retailer survey results represent feedback from store-level representatives, which were contacted by the Alliance's field representatives during their periodic store visits.

- Retailer store representatives perceive that 2005 sales may be higher than 2004 sales, continuing the trend in sales increases seen over the last few years. This suggests that retailers are still optimistic about increasing lighting sales.
- Retailers at the store level report that they expect that the diversity of their CFL bulb stock has leveled out.
- Trends for fixtures are similar to CFL bulb trends according to store representatives, with an expectation of increased sales in 2005 over 2004 levels.
- About half of stores say that they attempt to stock only ENERGY STAR-rated CFLs.
- According to retailer store representatives, CFL price is the most significant barrier to increasing CFL sales. Likewise, they report that saving energy and reducing the electricity bill is the most significant driver of CFL sales. These results are consistent with consumer survey results.

### **1.3.2 ENERGY STAR Clothes Washers**

**Goal: Maintain the Northwest's lead over the national average market share for ENERGY STAR clothes washers.**

**Conclusion:** The Alliance has met its ENERGY STAR clothes washer market share goal for 2004, with regional shares exceeding national shares by 10 percentage points.

**Goal: Achieve annual market share for UHE clothes washers (modified energy factor >1.8) of at least 50 percent of all ENERGY STAR clothes washers by 2007.**

**Conclusion:** The project has achieved ultra-high-efficiency (UHE) clothes washer market shares (of ENERGY STAR clothes washer sales) of 39 percent during the spring appliance promotion, and these shares may increase in 2005 with an increase in use of tiered rebates. The Alliance may consider alternative methods for expanding its collection

of data related to UHE market shares, in order to more definitively track its progress towards 50 percent UHE market shares by 2007.

**Goal: Facilitate adoption of the higher efficiency MEF level (1.8) as the 2007 ENERGY STAR specification.**

**Conclusion:** The Alliance is achieving market participation in accepting UHE clothes washers, paving the way for the 2007 ENERGY STAR specification change. The Consortium for Energy Efficiency (CEE) added support to the Alliance efforts in December 2004 when it adopted 1.8 MEF as its level for Tier 1 Clothes Washers, effective January 2007. Further research with clothes washer market actors will help establish the project's impact in influencing the 2007 specification.

Specific clothes washer-related evaluation highlights are presented below, with each topic described more fully in Chapter 9 of the report.

***Retailer Survey***

As mentioned above, retailer survey results represent feedback from store-level representatives.

- Retailers unanimously value the ENERGY STAR brand in their efforts to market and sell appliances. However, retailers believe that the ENERGY STAR brand is less important to consumers. As such, salespeople tend to promote the benefits of ENERGY STAR clothes washers, not necessarily the brand itself.
- Retailers feel that salespeople are the main drivers of ENERGY STAR appliance sales.
- Retailers believe that customers are most concerned with initial cost of clothes washers, followed by water usage, rebate availability, and then energy usage.
- Retailers report few barriers to sales of ENERGY STAR appliances.

***Mystery Shopper Survey***

Mystery shopper surveys were conducted by KEMA staff posing as a shopper in the market for a new clothes washer. Shoppers were trained to appear neutral with regard to preference for an energy efficient model. Data were collected on the specific models promoted as well as the salesperson's knowledge of energy efficiency.

- Most (81 percent) units shown to mystery clothes washer shoppers are ENERGY STAR units. Few (24 percent) units are UHE clothes washers, and they tend to be the highest priced product with the most features.
- Salespeople tend to promote the benefits of ENERGY STAR and UHE clothes washers, rather than promoting the ENERGY STAR brand itself.

- Salespeople possess a high degree of knowledge regarding the energy and water savings attributes of ENERGY STAR clothes washers.
- Rebates are promoted by salespeople for most, but not all, ENERGY STAR washers where a rebate is available.

### ***Consumer Survey***

The Double-Your-Savings consumer survey gathered information on the decision-making process from participants in the spring 2004 ENERGY STAR clothes washer promotion.

- ENERGY STAR clothes washer purchaser influences align with salesperson promotional pitches, with electricity and water savings the most important influences.

### **1.3.3 Project Process Results**

#### ***Appliance Retailers***

- Appliance retailers increasingly find the project to be helpful, when comparing current to prior evaluation results.
- The field representative's support is regarded by both appliance and lighting retailers as the most useful Alliance project tool, followed by point of purchase materials, sales training, brochures, coordination between retailers and utility incentives, and cooperative marketing.
- The degree to which retailers value the different project components varies by store type and utility territory (see Table 7-2 in Section 7 of this report for further detail).
- Retailer participation in the 2004 Double Your Savings spring clothes washer promotion was strongest in Washington and Oregon.
- At least one ENERGY STAR point of purchase merchandising material (e.g., door decals, flyers/brochures, shelf signs, product labels, and banners) was present in 86% of stores visited in the mystery shopper survey.
- Retailers would benefit from more advance notice to participate in promotions.

#### ***Lighting Retailers***

- Lighting retailers find the project tools to be less helpful in increasing their sales of energy efficient products than appliance retailers. However, the majority of retailers find the tools to be useful.
- The degree to which retailers value the different project components varies by store type and utility territory (see Figure 7-9 in Section 7 of this report for further detail).
- More retailers are expecting to run utility sponsored rebate promotions next year than most other types of promotions.
- Retailers would benefit from more advance notice to participate in promotions.

***Utilities***

- Awareness of the project's services is universally high among large and investor-owned utilities, with a significant portion (35 percent) of small utilities unaware.
- Utilities favorably rated the overall value of the services they receive from the Alliance in terms of staff, information, outreach support, and promotional support.
- Utilities clearly value the services of the utility coordinator and field representative.
- Use of and satisfaction with the northwestenergystar.com web site is high, with larger utilities using it the most.
- Participation in conference calls is most common among large and medium-sized utilities.
- Marketing services provided by the Alliance are valued and used most frequently by medium-sized utilities.

**1.3.4 Cost-Effectiveness Model Review Results*****Lighting***

- The measure cost assumption for 2005 may be overstated based on the current shelf survey results.
- Exterior CFL take-back may be too high – with at least one other local source suggesting interior and exterior take-back are the same and are 5 percent or less.
- Long-term forecasts of CFL sales may be overstated, unless the project is successful in expanding the purchaser base to continue the recent trends in sales increases.
- The model's assumptions of baseline sales may be understated, given the market momentum that has been gained over the past decade through other utility and national stakeholder efforts.

***UHE Clothes Washers***

- The assumed number of wash loads per household may be too high, leading to an overstatement of energy and water savings.
- Incremental measure cost assumptions for UHE clothes washers may be too low.
- Similar to the lighting model, the assumptions of baseline sales of UHE clothes washers may be understated.

**1.4 RECOMMENDATIONS**

We have organized the recommendations by lighting market, appliance market, and project process improvements.

**1.4.1 Lighting Market**

- **Improve CFL Sales tracking.** CFL sales for the grocery and drug store channel, which are not currently systematically tracked, should somehow be included more comprehensively in the future as this channel becomes more active.
- **Modify the project's CFL replacement metric to more explicitly focus on consumer satisfaction with CFL quality.** Track the percentage of CFL removals among current CFL users, along with future intentions to replace burnt-out CFLs with new CFLs in order to monitor CFL user satisfaction.
- **Raise consumer CFL awareness.** Inactive local utilities should be encouraged to implement CFL programs that at minimum inform their customers of CFLs (e.g., via bill stuffers) to raise awareness among nonshoppers. The Alliance already supports its member utilities and is uniquely positioned to provide this encouragement.
- **Address non-purchasing aware consumers.** The consumer survey results show that a large percentage (33%) of the region's population is already aware of CFLs but has not purchased them. We suggest that the Alliance conduct follow-up research to determine the specific barriers that face non-purchasers, as prior consumer surveys focused mostly on purchasers.
- **Continue to support lighting retailers' sales efforts and utility lighting incentive programs.** Initial cost was found to be the primary barrier among consumers who were aware of but had never purchased CFLs. Likewise, having received a CFL coupon was found to be one of the primary drivers of CFL purchases. The Alliance has sponsored projects over the past 5 years that have supported upstream incentives, manufacturer support, and midstream retailer interventions to encourage promotion of CFLs. Likewise, local utilities in the region have sponsored incentive programs that have targeted both retailers and consumers. These market interventions have worked together to educate consumers on the benefits of CFLs (via retailer promotions) and reduce their cost (via incentives). Some combination of these activities should be continued to encourage nonpurchasers to buy CFLs in order to meet the Alliance's long-term CFL market share objective. With CFLs priced at an average of \$7.50 each (during nonpromotion periods), clearly there is a need to lower the retail price if the Alliance expects to meet long-term CFL sales objectives.
- **Continue to support CFL quality initiatives.** CFL satisfaction is a primary driver of future purchase intentions and, as such, product quality should be monitored to ensure current purchasers continue purchasing CFLs. Over the past several years, the Alliance and other nationwide stakeholders have worked with ENERGY STAR to set, enforce, and monitor the quality of CFLs sold in retail channels through the Program for the Evaluation and Analysis of Residential Lighting (PEARL). While these efforts have probably helped to improve the quality of products being sold today, there are still issues with regard to product performance and consumer perception of CFLs. There is likely the need for stakeholders to continue in some way to provide oversight of product quality. The Department of Energy's proposed ENERGY STAR third-party testing and verification process may help to fill this gap.

- **Do not rely on ENERGY STAR branding for consumer marketing of CFLs.** The ENERGY STAR label is not a driver of CFL sales. It is best that the project continue to support the ENERGY STAR program's Change a Light campaign and other efforts to increase product quality, but there is little evidence that the brand itself is effective in marketing CFLs to consumers. Most of the CFLs being marketed by retailers are ENERGY STAR labeled, which suggests that retailers and/or manufacturers understand that these CFLs are of higher quality and in the long term better for sales. It follows that very few consumers are being influenced to purchase CFLs due to the label since it is no longer a distinguishing characteristic among CFLs.
- **Continue to support suppliers in expanding CFL bulb diversity.** There remains the potential for expanding the diversity of product within most stores and across stores, particularly for bulb style (wattage diversity is fairly good). Twister-style bulbs are the predominant bulb style, which consumers tend to like and manufacturers have successfully produced on a large scale at lower prices. Product availability and diversity are not presently significant barriers on the consumer side, and it follows that retailers are not planning on increasing the variety of their CFL stock in the short term. However, to truly transform the market, CFL versions of all standard light bulb styles must be readily available at most stores that stock lighting.
- **Attempt to focus field representative support on stores and in regions that value the services the most and could benefit most from the support.** These stores and areas are generally independent stores and stores in Montana and Idaho, who have high hopes of increasing sales in the coming year and highly value the project's services. National chain stores and stores in particular in Oregon and Washington often run their own promotions and do not benefit as much from this aspect of the project's services.

#### **1.4.2 Appliance Market**

- **Expand the project's tracking of UHE market shares.** Attempt to obtain data on the MEF of all ENERGY STAR clothes washer sales from a sample of retailers across the year. These data may then be compared with UHE market shares during the promotion for the sample.
- **Continue to focus on providing salespeople with information and other tools to sell ENERGY STAR appliances,** since they drive purchase decisions. Retailer services should be designed with the understanding that salespeople tend to promote ENERGY STAR products by touting their benefits, not by using the brand.
- **Increase the project's focus on stores and areas where it has not been as effective in affecting market change.** Independent stores and stores in Montana and Idaho have lower market shares and have had less success with the project. Since they highly value the field representative, who visits independent stores the least frequently (around once per quarter), there may be benefits associated with increasing the frequency of visits to these stores.



### 1.4.3 Project Process Improvements

#### *Retailers*

- **Provide advance notice of upcoming promotions by e-mail or otherwise.** Track retailer initial interest and final participation levels to help determine the appropriate advance notice. Consider a bi-annual newsletter to all retailers with schedules of planned events, evaluation findings, and goals for the year to help them more clearly understand the Alliance efforts.
- **Review the services that retailers receive with regard to the Change a Light program and identify ways to improve participation rates.** Some retailers felt that while the promotion drew interest, it did not impact sales much. Providing more advertising, marketing materials and merchandising support, along with leveraging utility incentive efforts that reduce the retailer price, would address some retailers' concerns with the promotion.

#### *Utilities*

- **Consider tailoring project communication strategies to more effectively reach small utilities.** Possible approaches include a bi-annual newsletter targeted towards the small utilities and any medium-sized utilities that are known to have little or no project activity, or a less frequent subscription-based e-mail service than the current E-Newsletter with information targeted to smaller utilities.
- **Clarify to stakeholders what services the utility coordinator provides and promote the contact to help broaden exposure to the services.** In the past, much of the information dissemination had to be done manually so that contact had to be more controlled. Because more and more of the materials are available on the web site, leveraging the staff member to increase exposure among utilities and get them pointed in the right direction can increase usage of the other more self-service project offerings.
- **Continue active coordination with utilities.** Create some trade show or other project support materials that promote the northwestenergystar.com web site now that it has more consumer-based information. Continue to build the consumer resources so that utilities refer customers to the site.
- **Work with Bonneville to understand program guidelines and implications those might have on the market.** Determine how best to use the Alliance resources to support Bonneville members as they navigate any new rules and try to decide what programs to implement at their utilities.
- **Use utility comments noted throughout the process evaluation to include an "Evaluation Feedback" corner in the E-Newsletter.** This will help address some questions that utilities brought up but will also let those who posed the questions know that the Alliance is listening to their concerns.



### ***Web Site***

- **Use the feedback provided in the web site discussion section of the web site to refine the site and increase offerings.** A sample of the recommendations include:
  - Update product fact sheets to enhance the quality of the technical information and add more detailed discussion about issues like lighting.
  - Post “Date Updated” information on pages with regularly changing information like the list of qualifying ENERGY STAR models or otherwise highlight new items.
  - Post an Excel version of the ENERGY STAR qualifying model list.

### ***Retailers and Utilities***

- **Provide more advance notice of promotions to retailers and utilities.** Coordinate advance notice by e-mail and alert both retailers and utilities at the same time.
- **Consider strategies to increase the level of coordination between utilities and retailers.** While retailers rank coordination with utilities near the bottom of their list, utilities would like to have more involvement in the project efforts in their retail community. Consider ways to increase utility involvement opportunities so that utilities see the value of the project efforts and improve their connections with retailers. To avoid retailer backlash, do not add restrictions, forms, or other requirements that complicate the process.

## ***1.4.4 Cost-Effectiveness Model Improvements***

### ***Lighting***

- **Attempt to collect CFL sales data by product type** in order to sales weight measure cost data for the lighting model. This will facilitate the development of a sales weighted measure cost value.
- **Collect a small sample of CFL price data during the fall promotion.** This activity will facilitate the development of an annualized measure cost data. The lighting shelf inventory data that are presented in this report are off-promotion price data, which may overstate retail price.
- **Develop a method to more accurately determine CFL measure cost.** At present, the only available data on CFL measure cost are the shelf inventory survey data. As mentioned previously, these data are not sales weighted. We recommend that the project team leverage the CFL sales data that it obtains from retailers to develop sales weights at least at the bulb style level.
- **Revisit the rationale for a different and higher (versus interior) exterior CFL take-back value.** The higher exterior value may not be justified.

- **Incorporate the next round of consumer survey results (e.g., those that focus on non-purchaser future CFL purchase intentions) and future Alliance project and local utility program plans into a reevaluation of the long-term CFL sales forecasts.**
- **Build a rate of increase in baseline sales into the model's long-term estimates, as currently it assumes flat levels of sales.** While there may be no perfect method available to break out Alliance-influenced sales from all other sales (baseline, local utility, etc.), a starting point would be to estimate sales for a region of the nation with no active local programs. This type of exercise has been conducted over the last several years in the Northeast in order to directly estimate utility program net effects. These estimates could be applied to the Northwest on a per person basis, and a trend could be estimated based on the change in sales in these inactive regions over the past few years.

### ***UHE Clothes Washers***

- **Lower the number of wash loads per household from 352 to 275 loads,** which is equal to a recent RASS survey estimate from a large Northwest utility, or develop a justification for use of the higher value.
- **Revisit the incremental measure cost assumption for UHE clothes washers, since it is likely too low.**
- **Update the model's long-term assumptions of baseline sales to account for the market effects of the 2007 standards and ENERGY STAR specification changes.** While the Alliance supported the 2007 standards, that support probably does not justify assuming flat baseline sales for the next decade or longer. Baseline sales should increase starting in 2007, as a reflection of market change independent of Alliance activities.

This document is the first Market Progress Evaluation Report (MPER 1) for the Northwest Energy Efficiency Alliance's (Alliance) ENERGY STAR® Consumer Products project (project). The project officially launched in early 2004, and was recently extended through 2006. This report documents the results of evaluation activities conducted from September 2004 to May 2005. The second phase of evaluation activities that will support MPER 2 will be initiated in September 2005. A third MPER may be prepared to document the project's final accomplishments in early 2007.

## **2.1 PROJECT DESCRIPTION**

### **2.1.1 Background**

The Alliance seeks to make affordable, energy-efficient products and services available in the marketplace. To that end, it supports projects targeted at the residential, commercial, industrial, and agricultural sectors in the Pacific Northwest. This report documents the results of an evaluation of the Alliance's ENERGY STAR Consumer Products project, which, along with the ENERGY STAR Homes Northwest project, comprises the Residential Sector Initiative.

Consumer Products is a continuation of successful regional efforts to promote ENERGY STAR-qualified lighting, appliances, windows, and other home products to Northwest consumers. In the late 1990s, the Alliance launched three residential projects targeting energy-efficient light bulbs, fixtures, and resource-efficient clothes washers. These projects were designed to introduce these products to the marketplace by developing relationships with product manufacturers. The projects included manufacturer financial incentives to increase product availability and reduce product price.

In 2000, the two lighting projects were combined and the clothes washer project was expanded to address dishwashers, refrigerators, and room air conditioners. The project narrowed its focus to ENERGY STAR-rated products and changed its intervention target from manufacturers to retailers. The project provided retailers with salesperson training and advertising and marketing support to encourage ENERGY STAR product promotion and marketplace acceptance. Local utility activities were leveraged and regional and national initiatives were launched to encourage the improvement of ENERGY STAR product quality.

Starting in 2004, all residential project activities were rolled up into the Residential Sector Initiative, which includes the ENERGY STAR Consumer Products project and the ENERGY STAR Homes Northwest project. This umbrella approach to targeting residential products and homes streamlines the Alliance's messaging to partnering utilities and upstream market actors and improves the functional efficiency of project implementation.

The Consumer Products project reflects the culmination of over 5 years of market interventions and market intelligence. As energy-efficient consumer products have moved through the various stages of the adoption process, the project has evolved accordingly to ensure its strategies are cost effective.

### **2.1.2 Consumer Products Approach**

Through this project, the Alliance is implementing a multi-pronged approach for targeted consumer products, with a particular focus on compact florescent lighting (CFL) products and the next-generation of clothes washers—ultra-high-efficiency (UHE) clothes washers.

The project includes a range of market-based activities focused on:

- Improving the quality and consumer acceptance of CFLs
- Generating increased awareness of the higher efficiency clothes washers.

The project provides cooperative marketing opportunities and field services to retailers to leverage the impact of promoting higher sales of ENERGY STAR products to consumers, and coordinates the availability of financial incentives for qualifying products. The project is also coordinated with national efforts, such as ENERGY STAR's Change a Light and Double Your Savings marketing programs, the lighting quality research conducted by the Program for Evaluation and Analysis of Residential Lighting (PEARL), and the work by the Consortium for Energy Efficiency (CEE) to encourage higher ENERGY STAR efficiency levels. Finally, the project supports the advancement of new lighting technologies (e.g., dimmable, reflector CFLs) and supports efforts to encourage the proper disposal of burned-out CFL lamps.

The prime implementation contractor is Portland Energy Conservation Inc. (PECI), with subcontractors Applied Proactive Technologies (APT) and ECOS Consulting. PECI is responsible for meeting the project's goals and leads the "products" component of the project, while ECOS leads the lighting component and APT provides field support for both products and lighting. These three firms have been implementing the Alliance's residential projects since the project's inception, and have developed strong working relationships with the region's market actors and utilities.

### ***Field Support***

As detailed in the final Residential Lighting Project MPER (2004), field services are the heart of the project. The project's field representatives have developed relationships with both retailers and utilities over the years that facilitate the promotion of ENERGY STAR consumer products. From introducing general energy-efficiency concepts to providing promotional materials to salesperson training, field representatives have become part of the fabric of the retail environment. Likewise, the utilities rely on field support as a link to regional and national initiatives and promotions.

### Retailers

The key to the effectiveness of the project's retailer field services is the consistency and frequency of visits. APT's field representatives conduct on the order of 600 visits per month, with appliance stores and do-it-yourself (DIY)/lighting chains contacted every 5 to 6 weeks. Drug stores and mass merchandisers are contacted every 12 weeks, and "mom and pop" hardware stores every 4 to 5 months.

Field representatives provide a variety of services during each visit depending on the status of seasonal promotional activities (e.g., utility and/or national programs). Retailers are updated on utility incentive program status and provided with product qualifying lists and updated point-of-purchase materials. Field representatives may provide some salesperson training and possibly assist customers with questions concerning energy-efficient products.

Field services are adapted to the type of retail store and the channel by which energy efficient products are sold. For example, small rural stores are often neglected by manufacturer representatives and, as such, field representatives provide general information on energy-efficient products and marketing support since they do not often have established methods for selling these products. In contrast, national DIY chains are more sophisticated and often already incorporate energy efficiency into their sales pitch and promotional materials. Field support to this audience is more specific and technical.

Table 2-1 provides a summary of the number of field representative visits by state for 2004 and the first quarter of 2005. Visits were highest in the fourth quarter of 2004.

**Table 2-1**  
**Field Representative Visits to Retailer Stores by State**

State	Q1 2004	Q2 2004	Q3 2004	Q4 2004	Q1 2005	Total	Percent of Total Visits
Idaho	90	251	219	281	223	1,064	14%
Montana	99	223	190	236	176	924	12%
Oregon	282	626	595	763	608	2,874	37%
Washington	394	690	691	734	484	2,993	38%
Total	865	1790	1695	2014	1491	7,855	
Percent of Total	11%	23%	22%	26%	19%		

### Utilities

The Alliance provides a variety of services to the utility market. These services include:

- The northwestenergystar.com web site, which acts as a source of project, technology, and market information as well as a distribution channel for materials that the Alliance previously provided in paper form

- A utility coordinator to help utilities effectively use the Alliance project services
- Field representatives who focus their field visits on retailers to promote the project but also periodically visit utilities and help educate them on the services available
- Materials (the “Utility Resource Kit”) to help utilities plan, implement, and market their programs
- Marketing and outreach support
- Communication services (e-mail notices, E-newsletter, working groups, conference calls).

The utility coordinator and the field representatives are the primary contact points for utility program managers. Several of the larger utilities are more aware of all of the Alliance and PECI players so they tend to contact a wider range of people within the organization. The utility coordinator and field representatives aim to meet or talk with contacts at active utilities, publics, and those who have DSM funding once each quarter. This pool is about 50 utilities.

Table 2-2 provides a summary of the utility visits for the 5 months between November 2004 and April 2005. This shows a slightly lower total number of utility visits than projected with a definite focus on the top 50 sites (47 utilities have been visited at least once during the 5 months). There are a total of 140 utilities.

**Table 2-2**  
**Field Representative Visits to Utilities by State for the 5 Month Period from 11-04 to 4-05**

Utility	Washington	Oregon	Montana	Idaho	Wyoming	Total
Total Visits (5 months)	42	17	5	4	1	69
Total Utilities	24	14	5	3	1	47
Average Visits/Utility	1.75	1.21	1.00	1.33	1.00	1.47

As the focus of the residential sector initiative has moved towards New Homes, the utility coordinator has spent a large portion of their time serving that need. A big focus in the 2004 project was to launch the northwestenergystar.com web site. This serves as an easier means for utilities to obtain Alliance information and provides readier access to Alliance services. This has helped to reduce the demands for simple information requests on the utility coordinator.

### ***Upstream Market Support***

The Alliance provides several upstream market efforts that are focused on improving the quality and availability of energy-efficient consumer products. Specific efforts include:

- Promoting higher efficiency levels for ENERGY STAR through supplier chains as well as manufacturers
- Helping link retailers, suppliers, and manufacturers to effect change in the whole supply chain
- Supporting the advancement of new, more efficient technologies.

### ***National Program Coordination***

The project involves coordinating with National ENERGY STAR efforts. This includes:

- Coordinating with national promotions such as Change-A-Light and Double-Your-Savings
- Working with PEARL to develop and monitor lighting quality and work towards identifying new lighting technologies
- Working to facilitate the adoption of the higher efficiency MEF level (1.8) as the 2007 ENERGY STAR specification. The Alliance project manager is taking a multi-pronged approach to priming the market for this change. Retailers (managers and salespeople) are being trained and provided with materials to familiarize themselves with the benefits of UHE clothes washers and the technicalities of the features that make a clothes washer UHE versus ENERGY STAR. Likewise, as a result of the Alliance's utility support, rebate structures are being revised to in some cases offering a higher incentive amount in the form of a second rebate tier for UHE clothes washer purchasers. Currently, 16 electric utilities (and many more water utilities) and the Energy Trust of Oregon offer a tiered clothes washer rebate to encourage purchases of the highest efficiency clothes washers, which represents more than half the region's consumers. Both of these market strategies target consumers, with information, exposure, education and incentives from retailers and utilities encouraging consumers to become aware of, understand the benefits of and purchase UHE clothes washers.

### ***Emerging Technology Support***

In addition to supporting national and regional energy efficient product standards development, the Alliance also supports emerging technologies. These efforts include both technical and market based initiatives.

### ***CFL Waste Disposal***

The Alliance is committed to helping the market create effective ways to dispose of CFL waste using an environmentally focused approach.

#### ***2.1.3 Market Progress Indicators***

The project has established several market progress indicators for success:

- **Lighting Products**
  - Increase CFL sales in the Northwest from 750,000 to 1 million annually from the 2003 level of 3.8 million, reaching total sales of 9 million per year by 2010.
  - Increase the rate consumers replace expired CFLs with new CFLs from 30 to 80 percent by 2010.

- Increase availability, selection, and affordability of lighting products in the region.
- **Clothes Washers**
  - Maintain the Northwest's lead over the national average market share for ENERGY STAR clothes washers.
  - Achieve annual market share for UHE clothes washers (modified energy factor >1.8) of at least 50 percent of all ENERGY STAR clothes washers by 2007.
  - Facilitate adoption of the higher efficiency MEF level (1.8) as the 2007 ENERGY STAR specification.

## 2.2 EVALUATION OBJECTIVES AND APPROACH

The goals of the evaluation are to:

- Measure progress toward overcoming market barriers, leveraging market opportunities, and the product or service becoming sustainable in the marketplace
- Document the project
- Provide ongoing feedback to the Alliance and Project Contractor.

The evaluation approach consisted of the following research activities:

- Project staff interviews
- Assessment of secondary source product sales and market share data
- In-depth interviews with utilities
- Consumer lighting purchaser survey
- Double Your Savings (DYS) ENERGY STAR clothes washer purchaser survey
- Lighting and appliance retail store manager surveys
- Lighting retailer shelf survey
- Clothes washer mystery shopper survey
- Assessment of the project's cost-effectiveness assumptions.

Table 2-3 shows the indicators of lighting market progress that were tracked by the evaluation and their linkages to the project's goals. Also shown is the research component that was used to track the market indicator. Table 2-4 shows the same overview for appliances.



**Table 2-3**  
**Lighting Project Goals, Market Indicators and Research Tasks**

Project goal	Market indicator	Research Task			
		CFL sales assessment	CFL purchaser survey	Retailer survey	Shelf survey
<b>Increase CFL Sales</b>	Estimated annual sales in 4 states	●			
<b>Increase customer product knowledge and adoption</b>	Percentage of customers who are aware of CFLs		●		
	Percentage of customers who have purchased CFLs		●		
	Future CFL purchase intentions		●		
	Barriers to CFL sales		●	●	
<b>Improve product quality and performance and customer perception of product quality</b>	Customer satisfaction with CFLs		●		
	Incidence of CFL removals due to dissatisfaction		●		
<b>Improve product availability</b>	Total and share of space dedicated to energy efficient lighting products				●
<b>Improve product selection</b>	Number of CFL styles and wattage categories stocked				●
	Number of CFL brands for sale by style and wattage categories				●
	Trends in retail stocking			●	
<b>Improve affordability</b>	Prices of CFLs by style and wattage category				●
<b>Strengthen ENERGY STAR branding</b>	Effectiveness of energy efficient lighting displays				●
	Influence of ENERGY STAR on CFL purchases		●		

**Table 2-4**  
**Appliance Project Goals, Market Indicators and Research Tasks**

Project goal	Market indicator	Research Task				
		Appliance market share assessment	UHE purchaser survey	Retailer survey	Mystery shop survey	Utility In-depth interviews
<b>Maintain ENERGY STAR clothes washer market share</b>	Market share of ENERGY STAR appliances sold in the 4 state region of ENERGY STAR partner retailers	●				
<b>Increase UHE clothes washer market share</b>	Share of UHE units as a percent of all ENERGY STAR qualified units sold	●				
<b>Facilitate adoption of MEF 1.8 as 2007 ENERGY STAR specification<sup>1</sup></b>	Manufacturers' assessment of importance of NW projects in their position regarding the next ENERGY STAR specification					
	DOE and CEE assessment of importance of NW projects in establishing new specification					
<b>Enlist retail channels in promoting UHE clothes washers</b>	Percentage of UHE purchasers reporting familiarity with that product range		●			
	Percent of UHE units shown to purchaser				●	
	Pricing of UHE units v. other qualifying units				●	
	Initiative of sales staff in promoting UHEs				●	
<b>Strengthen ENERGY STAR Brand</b>	Percentage of recent purchasers who report ENERGY STAR influence on selection		●			
<b>Support retailer promotion of ENERGY STAR products</b>	Retailer assessment of effect of project on promotional practices, quality of project design and delivery			●		
	Participating utility assessment of project usefulness and effect on retailers and customers					●
	Barriers to sales of ENERGY STAR products			●		

<sup>1</sup> The progress of this program goal will be addressed in MPER2.

The project staff and utility in-depth interviews, along with the retailer surveys, will be used to document the project's progress to-date and to assess the effectiveness of the project's processes. Table 2-5 shows the design of the process evaluation. The first column identifies the major research areas that were explored by the evaluation. The second column lists some specific research questions (not all inclusive) that were addressed. The final three columns link the research activities that supported the process evaluation to the research areas and questions they helped to address.

**Table 2-5**  
**Process Evaluation Focus, Research Questions and Data Sources**

Research Area	Research Questions	Research Task		
		Lighting Retailer Survey	Appliance Retailer Survey	Utility In- depth interviews
<b>Awareness and use of the project's services</b>	What fraction of utilities is aware of the project and does awareness differ by utility size? What are usage rates for the various project services? Does usage vary by utility size? How has awareness and usage changed over time?			•
<b>Overall satisfaction with the project</b>	How satisfied are utilities and retailers with the project in general? How has satisfaction changed over time? Does satisfaction differ by utility size? By retailer store type (chain v. independent) or retailer location (East v. West, e.g.,)	•	•	•
<b>Valuation of the project's services</b>	How do utilities and retailers value the specific project's services? Are certain services valued more than others? Does valuation of certain services depend on utility size and retailer characteristics?	•	•	•
<b>Overall valuation of the project</b>	How do utilities value the project overall? How has this valuation changed over time? How does this valuation differ by utility size? What kind of feedback do the utilities have regarding improving the value of the project in the future?			•

## 2.3 REPORT ORGANIZATION

The remainder of this report is organized as follows:

- Section 3: Survey Methods
- Section 4: Product Sales and Market Share Assessment
- Section 5: Lighting Survey Results
- Section 6: Appliance Survey Results
- Section 7: Program Process Results
- Section 8: Cost-Effectiveness Assessment
- Section 9: Conclusions and Recommendations
- Appendix A - Shelf Survey Tables
- Appendix B - Survey Instruments.

### 3.1 OVERVIEW OF LIGHTING MARKET RESEARCH METHODS

KEMA conducted four research tasks in order to measure the lighting market indicators identified previously in Table 2-2.

- **CFL sales assessment.** KEMA obtained estimates of compact fluorescent lamp (CFL) sales in the region by quarter from the Alliance's project subcontractor and reviewed their sales estimation methodology. The objectives of this assessment were to measure the Alliance's progress in meeting its lighting market share goals.
- **Consumer lighting purchaser survey.** A telephone survey was administered to a representative sample of homes in the Northwest to determine CFL awareness and purchase rates for the residential population and to probe for barriers to purchase among nonpurchasers. CFL purchasers were asked about their satisfaction with the product, their future purchase intentions, and motivations for past purchases. This effort built off prior Alliance evaluation consumer lighting purchaser surveys. Approximately 1,600 surveys were conducted in November of 2004.
- **Lighting retailer store manager survey.** The Alliance's field contractor staff conducted an in-person survey with 100 store managers in the course of their periodic field visits with lighting retailers. The objectives of this survey were to assess trends in retailer stocking patterns and evaluate the effectiveness of the project's retailer services. This effort leveraged a prior lighting retailer store manager survey that was administered in 2002.
- **Lighting retailer shelf survey.** KEMA conducted a lighting product shelf survey at 73 lighting retailers in the Northwest. This survey was intended to establish the shares of shelf space dedicated to CFLs and ENERGY STAR CFLs and fixtures and to gauge the extent that retailers are promoting these products.

#### 3.1.1 Consumer Lighting Purchaser Survey Research Approach

**Survey Objectives.** The 2004 lighting purchaser survey built upon three prior annual survey efforts (starting in 2001), which explored motivations of CFL purchases, satisfaction with CFLs, future CFL purchase intentions, and CFL removals. The 2004 survey was expanded to address all consumers (i.e., not just CFL purchasers) to determine CFL awareness and explore barriers to purchases. Furthermore, the Alliance was interested in modeling CFL satisfaction and future purchase intentions, and the survey was tailored to meet these objectives.

**Sampling.** A telephone survey was conducted with a random sample of households in Oregon, Washington, Montana, and Idaho in November 2004. The sample was stratified by state and

rural versus urban, and target completes were set for each stratum proportional to the population. About 1,600 surveys were completed. Table 3-1 shows the survey completes by stratum.

**Table 3-1**  
**Lighting Purchaser Survey Completes**

State	Urban	Rural	Suburban	Total	Percent of Total
ID	53	53	91	197	12%
MT	0	109	80	189	12%
OR	195	36	195	426	27%
WA	553	37	196	786	49%
Total	801	235	562	1,598	100%
Percent of Total	50%	15%	35%	100%	

**Data Collection.** An experienced survey research firm conducted the telephone interviews using random-digit-dialing in November of 2004.

**Analysis.** Results were produced for each survey question, both overall and for various categories of interest (i.e., consumer CFL experience categories discussed earlier). Models were developed to help understand the drivers of CFL awareness, purchases, satisfaction, and future purchase intentions, allowing all potential drivers to be considered simultaneously. A factor that may appear to be a driver when considered on its own may not still be a driver when other factors are considered as well. The models also allow the relative importance of various drivers to be estimated.

### **3.1.2 Lighting Retailer Shelf Survey Research Methods**

**Survey Objectives.** The lighting retailer shelf survey was implemented with the intent to characterize the stock of CFLs currently available to the region's consumers in terms of applications, features, wattage ranges, ENERGY STAR qualification, and price. The information gathered allows for tracking of CFL availability, diversity, and price over time.

**Sampling.** A sample of 73 stores was selected for the on-site shelf survey. This sample was taken from a database of stores selling lighting products in the Northwest.<sup>2</sup> The sample was stratified by store ownership (i.e., franchise, national chain, regional chain, or independent) and store type (e.g., specialty versus variety store). Target completes were set for each stratum with the intention of ensuring a minimum number of sample for each stratum and maximizing the efficiency of the sample by allocating more sample to strata with expected higher variance. For example, we expected less variation across outlets of individual national chains, and as such,

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<sup>2</sup> Over time, the Alliance's implementation contractors (both ECOS Consulting and Applied Proactive Technologies) have developed a list of retailers in the region that sell CFLs based on their interaction with the major lighting retailers at both the regional and store levels. See Section 4.1.2 for more information about the database.

assigned sample to national chains at the chain level (as opposed to individual stores). Table 3-2 shows the survey completes by stratum.

The reader should take note of another sampling consideration with regard to the shelf survey inventory data. These data represent retailers' stocking patterns and may not be representative of what is purchased. In order to use these data to understand what is being purchased (i.e., in terms of the average price paid by consumers or the most typical model selected by consumers, etc.), sales weights would need to be developed and applied. In our conclusions, we recommend expanding the project's CFL product sales data collection in order to support the development of sales weights.

**Table 3-2**  
**Lighting Shelf Survey Sample Design**

Stratum Description	Number of chains	Number of stores	Completes
Chain club membership store	3	108	6
Chain mass merchandise	7	160	6
Chain drug/grocery store	8	347	18
National/Large regional chain home improvement/hardware store	3	109	8
Small regional chain home improvement/hardware store	19	79	6
Franchise hardware (e.g., Ace, True Value)	4	277	12
Independent variety (mass merchandise, drug/grocery, club)	na	92	4
Independent specialty (lighting or home improvement/hardware)	na	344	13
Total	44	1516	73

**Data Collection.** Two KEMA field representatives collected lighting shelf data in April and May 2005. Surveyors measured the shelf space dedicated to light bulbs and fixtures, with CFL and ENERGY STAR CFL products as subsets of all lighting products. Surveyors also gathered detailed information characterizing the light bulb stock in terms of price and style.

**Analysis.** Survey data were compiled, cleaned, and analyzed by KEMA staff utilizing Microsoft Access and the SAS System. Quality control efforts were made to ensure data entry was performed with accuracy and consistency, including frequency cross-checks and random verifications with the original survey documents. Simple population weights were applied to the survey results for each stratum equal to the population divided by the number of sample completes. Survey results were reviewed by state, region (east and west of the Cascades) and store type.

### 3.1.3 Lighting Retailer Store-Level Manager Survey Research Methods

**Survey Objectives.** The lighting retailer survey characterizes recent changes in CFL stocking patterns, promotional practices, and pricing. It also reveals retailers' perceptions of trends in consumer issues relating to CFLs, as well as perceived ENERGY STAR program effectiveness.

**Sampling.** Field representatives employed by the Alliance's field contractor, Applied Proactive Technologies (APT), completed 100 surveys with store representatives in the course of regular retailer visits during March–May 2005. The sample of regularly visited stores was stratified by state, store type, and frequency of visits. Stores that were visited every month were defined as L-1, those visited every 2 months L-2, and those visited every quarter L-3. APT determines the amount of visits by the store's involvement in selling ENERGY STAR products. Thus, L-1 stores are typically the national hardware chains and lighting specialty stores. L-2 stores are mass merchandise chains and drug stores, and L-3 stores are independent stores. Table 3-3 shows the survey completes by stratum.

**Table 3-3**  
**Lighting Retailer Survey Sample Design**

State		OR	WA	MT	ID	Total
Store Type						
Chain	L-1	10	10	5	6	31
	L-2	5	5	3	5	18
	Subtotal	15	15	8	11	49
Independent	L-1	9	9	5	6	29
	L-2	4	4	2	4	14
	L-3	3	3	1	1	8
	Subtotal	16	16	8	11	51
Total		31	31	16	22	100

**Data Collection.** Surveys were conducted in person with store representatives by APT staff during regular site visits. The few sites that could not be done in person for logistical reasons were conducted over the telephone. Surveys were collected and processed by KEMA staff.

**Analysis.** Survey data were compiled, cleaned, and analyzed by KEMA staff similar to the process used to clean and analyze the lighting shelf survey data. Quality control efforts were made to ensure that data entry was performed with accuracy and consistency, including frequency cross-checks and random verifications with the original survey documents. Weights were developed based on the population of stores characterized for the lighting shelf survey, with stratum weights equal to the population divided by the number of sample completes. Survey results were reviewed by state, region (east and west of the Cascades) and store type. Results were also compared to prior lighting retailer surveys, and changes over time are reported.



### 3.2 OVERVIEW OF APPLIANCE MARKET RESEARCH METHODS

KEMA conducted four research tasks to measure the appliance market indicators identified in Table 2-2.

- **Appliance market share assessment.** KEMA obtained overall appliance sales and ENERGY STAR appliance and ultra-high-efficiency (UHE) market shares from the Alliance's contractor, PECI, and reviewed their sales and market share estimation methodology. The objectives of this assessment were to measure the Alliance's progress in meeting its appliance market share goals.
- **Double Your Savings (DYS) ENERGY STAR clothes washer promotion participant survey.** A telephone survey was administered to 100 program participants, in which electric utilities and clothes washer manufacturers offered rebates ranging from \$25 to \$50. The survey objectives were to assess the program's effectiveness on purchaser decision-making, identify other sources that affect decision-making, identify sources of information used in decision-making, and characterize participant ENERGY STAR and general energy-efficiency awareness. This effort leveraged a prior DYS participant survey that was conducted on behalf of the Alliance in 2002.
- **Appliance retailer store manager survey.** The Alliance's field contractor conducted an in-person survey with 100 store managers in the course of their periodic field visits with appliance retailers. The objectives of this survey were to assess the effectiveness of the program on retailer behavior. This effort leveraged a prior appliance retailer store manager survey instrument that was administered in 2002.
- **Mystery shopper survey.** KEMA conducted clothes washer mystery shopper surveys at 25 appliance stores in the Northwest, observing a total of 90 clothes washers. This method was used to assess retailer promotional behavior with regard to ENERGY STAR and UHE clothes washers.

#### 3.2.1 DYS Participant Survey Research Methods

**Survey Objectives.** The principal objectives of the survey were to:

- Assess the effect of the program on participants' decisions to purchase ENERGY STAR clothes washers, and specifically those in the higher efficiency categories
- Identify and assess the effect of other influences on participants' purchase decisions
- Identify sources of information that respondents used in making their purchase decisions
- Characterize participants in terms of awareness of energy efficiency in general, awareness of the ENERGY STAR brand, and demographic attributes.

This effort focused on the effects of the program on participants' choice of UHE washers vs. other ENERGY STAR qualified models.

**Sampling.** KEMA selected a random sample of 100 participants stratified by state and level of rebate. The rebate-tracking database served as the sample frame. The database contained approximately 11,700 records with information on customer contact, location, rebate level, rebate source (utility v. manufacturer) and rebate amount. Table 3-4 shows the distribution of the participant population and sample by state and efficiency level. ES Level 2 represents the higher efficiency tier.

**Table 3-4**  
**Distribution of Participants and Sample Allocation**

	Participant Population			Sample Allocation		
State	ES Level 1	ES Level 2	Total	ES Level 1	ES Level 2	Total
ID	158	243	401	1	2	3
MT	194	221	415	2	2	4
OR	966	3,866	4,832	8	33	41
WA	1,310	4,753	6,063	11	41	52
Total	2,629	9,085	11,714	22	78	100

**Data Collection.** KEMA's survey research contractor Research America conducted the telephone interviews in early September 2004.

**Analysis.** KEMA analyzed the survey data in October of 2004, and delivered to the Alliance a memorandum describing the results in November of 2004.

### **3.2.2 Clothes Washer Mystery Shopper Survey Research Methods**

**Survey Objectives.** The goal of the clothes washer mystery shop survey was to determine trends in product types and pricing, and to assess sales force performance in regard to promoting and selling energy-efficient clothes washing machines.

**Sampling.** A sample of 25 stores was selected for the survey. This sample was taken from database of stores selling washing machines in the Northwest.<sup>3</sup> The sample was stratified by store ownership type (i.e., chain versus independent) and store type (i.e., appliance versus home electronics versus home improvement). Target completes were set for each stratum similar to the lighting shelf survey, to maximize sample efficiency. Table 3-5 shows the survey completes by stratum.

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<sup>3</sup> This database is a subset of the lighting database that the Alliance's program contractors have assembled over time containing lighting and appliance retailers across the Northwest. While for lighting, the program only has a subset of lighting stores in the Northwest, for appliances, which are far easier to identify, the program has nearly 100 percent of the stores in the database.

**Table 3-5**  
**Clothes Washer Mystery Shop Survey Sample Design**

Stratum Description	Number of chains	Number of stores	Completes
National appliance chain	2	91	3
National home electronics chain	2	36	3
National home improvement chain	3	145	9
Miscellaneous independent dealers	NA	359	10
Total		631	25

**Data Collection.** Mystery shop surveys on appliance retailers were conducted during late April and early May 2005, coinciding with the beginning of the ENERGY STAR *Spring Into a World of Savings* campaign. Salespeople were approached by one of two KEMA researchers presenting themselves as a shopper in the market for a new clothes washer. The researchers were trained by an experienced mystery shopper research firm before performing the surveys. Attempts were made to have the researchers appear to be from similar backgrounds to avoid potential bias in sales pitch based on the individual mystery shopper. Data were collected on the presentation and promotion of energy-efficient units, as well as the salesperson's knowledge on a set of energy-efficiency aspects pertaining to washing machines. Most responses to survey questions were taken from the salesperson's unprompted sales pitch. A prescribed set of prompts was then used to gather information not initially presented by the salesperson, such as knowledge on the ENERGY STAR label and modified energy factor. All responses requiring prompts were noted. An annotated copy of the survey instrument used can be found in Appendix B.

**Analysis.** We used the same set of cleaning and analysis procedures as described for the lighting shelf survey. While we analyzed the mystery shopper results by store type and region, there were too few stores in the sample (25) to produce meaningful results by these categories. This type of research method is subjective by nature, and a larger sample size would not have necessarily increased the "precision" of the results since they are meant to provide a characterization of behaviors rather than quantitative measurements.

### **3.2.3 Appliance Retailer Store-Level Manager Survey Research Methods**

**Survey Objectives.** The objectives of this survey include identifying:

- How retailers saw the energy star appliance market changing
- How retailers use the ENERGY STAR qualifications to sell their products
- How the various program support services help the retailers
- Perceived market barriers
- Retailers assessment of customer rationale for making purchase decisions.

**Sampling.** APT field representatives completed 100 surveys with store representatives in the course of regular retailer visits during March, April and May 2005. The sample of regularly visited stores was stratified by state and store type. Table 3-6 shows the survey completes by stratum

**Table 3-6**  
**Appliance Retailer Survey Sample Design**

State	OR	WA	MT	ID	Total
Store Type					
Chain	20	20	8	12	60
Independent	12	12	6	10	40
Total	32	32	14	22	100

**Data Collection.** Surveys were conducted in person with store representatives by APT staff during regular site visits. The few sites that could not be done in person for logistical reasons were conducted over the telephone. Surveys were collected and processed by KEMA staff.

**Analysis.** We used the same set of cleaning and analysis procedures as described for the lighting shelf survey. Similar to the lighting retailer survey, we used the characterization of the population of appliance stores for the mystery shopper survey to weight the appliance store survey database. We also compared prior appliance retailer survey results to the current results, and report on changes over time.

### 3.3 PROCESS EVALUATION METHODS

- **Project staff interviews.** KEMA conducted telephone interviews with Alliance and key project providers' staff to obtain a clear understanding of the project objectives, implementation methods, and ongoing project issues. These interviews provided the basis for the project overview and helped to identify key questions and research issues for the various surveys.
- **Lighting retailer store manager survey.** The Alliance's field contractor staff conducted an in-person survey with 100 store managers in the course of their periodic field visits with lighting retailers. The process-based objectives of this survey were to evaluate the effectiveness of the project's retailer services. (Lighting retailers store manager surveys are detailed in section 4.1.1.)
- **Appliance retailer store manager survey.** The Alliance's field contractor conducted an in-person survey with 100 store managers in the course of their periodic field visits with appliance retailers. The process-based objectives of this survey were to evaluate the effectiveness of the project's retailer services. (Appliance retailers store manager surveys are detailed in section 4.2.3.)
- **Utility program manager interviews.** KEMA conducted telephone interviews with 58 utilities throughout the region. The objective of the interviews was to collect detailed utility feedback on the Residential Sector Initiative and the ways that the

utility uses the Alliance services. The survey included questions not only on the ENERGY STAR Consumer Products Project, but also the ENERGY STAR New Homes Project. This report includes the findings from the Consumer Products project.

- **Review of project documents and website.** KEMA reviewed project materials, documents, monthly status reports, and other Alliance- and PECI-provided details about the project operation and function. These helped inform us of the ongoing changes that had taken place in the project as well as the current state of the project and its services.

### **3.3.1 Utility Program Manager Survey Research Methods**

**Survey Objectives.** The objectives of this survey include identifying:

- The market for new homes in their territory
- Details of the utility plans for or current ENERGY STAR New Homes project
- Familiarity with the Alliance services
- Use and satisfaction with the utility coordinator and field representative services
- Use and satisfaction with the project communication tools (northwestenergystar.com, materials provided in the Utility Resource Kit, e-mail notices, E-newsletter, working groups, and conference calls)
- Use and satisfaction with the project's outreach and promotional marketing services
- Assessment of utility program goals
- Identification of suggestions as to how the Alliance could better serve the utility

**Sampling.** The sample design started with a similar design to the previous studies which included a census of the large and investor-owned utilities and a random selection of medium and small utilities. In the previous study, small and medium utilities were grouped together. In this study, we created separate strata for those and sampled within their strata. In addition to attempting a census among large utilities, we attempted a census of customers who had started an ENERGY STAR new homes program or were planning a program. This was done to maximize the amount of utility feedback on this new program concept. Because of the oversampling that was done to capture new homes programs, we added sample points to a final count of 58 utilities to ensure that the medium and small strata had representative that were not just the early adopters. The final sample disposition is as follows in Table 3-7.

**Table 3-7**  
**Utility Survey Results**

Region	Large	Medium	Small	Overall	<i>n</i>
WA West	40%	24%	13%	22%	13
OR West	30%	36%	26%	31%	18
OR/WA East	10%	28%	13%	19%	11
Montana	10%	4%	26%	14%	8
Idaho	10%	8%	22%	14%	8
<i>n</i>	10	25	23		58

**Data Collection.** Surveys were conducted by KEMA over the phone by a senior KEMA project manager during April and May 2005. Utilities were generally very willing to participate in the study. KEMA took great care to record detailed verbatims during the interviews and has included those comments and utility recommendations throughout the report.

**Analysis.** Utility data were analyzed and cleaned. No weights were applied to the utility results. Verbatim responses were captured and incorporated. All utility results were reviewed by utility size as well as region and reporting was done using both of these crosses where appropriate. We also compared utility results to the results captured in the 2001 and 2003 study reports.

# 4

## **PRODUCT SALES AND MARKET SHARE ASSESSMENT**

This section presents the results of the compact fluorescent lamp (CFL) sales and appliance market share assessments. These assessments measure market progress in meeting the following project goals:

- Increase CFL sales in the Northwest from 750,000 to 1 million annually from the 2003 level of 3.8 million, reaching total sales of 9 million per year by 2010.
- Maintain the Northwest's lead over national average market share for ENERGY STAR clothes washers
- Achieve annual market share for ultra-high-efficiency (UHE) (modified energy factor >1.8) clothes washers of at least 50 percent of all ENERGY STAR clothes washers by 2007.

The Alliance's implementation contractors periodically report on CFL sales and appliance market shares. These internal reports are the primary basis of the assessments discussed below.

### **4.1 CFL SALES ASSESSMENT**

First, we discuss the many different methods used to track CFL sales and market shares. Next, we provide an overview of the project's internal CFL sales tracking system. Then we present consumer self-reported purchases. The CFL sales estimates for 2004 from the supply and demand-side analyses are then compared. We conclude with a discussion of retail store manager opinions about trends in CFLs and ENERGY STAR fixture sales.

#### **4.1.1 Background**

Tracking of CFL product sales and market shares has proven challenging to project implementers, policymakers, and evaluators. However, these data are often the most important metrics by which projects across the nation are evaluated. Likewise, sales and market shares are critical for understanding when, how, and to what extent to intervene in and eventually exit a market.

There are several sources from which lighting sales data may be obtained that can be used to develop estimates of CFL product sales and/or market shares:

- **Manufacturers.** Some regions have had success in soliciting product shipping data from manufacturers by state, but often products shipped to one state may ultimately be sold in another state.
- **Retailers.** Many lighting projects that offer discounts and/or support to retailers may require CFL product sales reporting from retailers. This approach is probably the

most widely used across the nation. In the Northeast and Northwest, evaluators have attempted to estimate CFL sales for nonparticipating retailers to determine total sales for the region.

- **Utilities.** Many utilities across the nation offer coupons, rebates or product buy-downs, and collect participation data from consumers, retailers, and/or manufacturers.
- **Point-of-sale (POS) data.** A California project, which commenced in 1998, purchased POS data for five major sales channels and developed monthly estimates of CFL sales and market shares for the state and for the nation. However, in 2003, the major retailers ceased cooperation with the project.
- **Consumer self-report data.** In the course of evaluating and conducting market research in support of lighting projects, surveys are often conducted with consumers that may provide self-reported incidences of CFL product purchases. These data are often unreliable because it is difficult for consumers to link CFL purchases in particular (i.e., as opposed to larger energy-efficiency purchases such as of a refrigerator) to a specific time period. These purchases may happen frequently, and some purchases may be of a single CFL or of a multi-pack.

#### **4.1.2 Supply-Side Assessment**

##### ***Approach***

The Alliance's project implementation contractor, ECOS Consulting, produces quarterly estimates of CFL product sales in the region. ECOS has been involved with lighting markets on behalf of the Alliance over the past several years and, as such, has developed relationships with manufacturers, distributors, and retailers that provide CFL products to the region. Likewise, ECOS has tracked CFL product coupon data for many of the active Northwest utilities. ECOS' resulting market knowledge and relationships provide the foundation for CFL product tracking, estimation, and reporting in the Northwest.

Over time, the Alliance's implementation contractors (both ECOS Consulting and Applied Proactive Technologies) have developed a list of retailers in the region that sell CFLs based on their interaction with the major lighting retailers at both the regional and store levels. The contractors attempt to include in the database almost every store in the region that carries CFLs on a consistent basis. In the Alliance's previous evaluation of their lighting project, EcoNorthwest conducted a market analysis using Dunn & Bradstreet Marketplace data to determine the population of lighting retailers in the Northwest. They conducted surveys with a sample of lighting retailers that were not found in the project database to determine the number of lighting retailers that sell CFLs. They concluded that approximately 3,600 stores in the Northwest sell CFLs, with retailers in the database accounting about 90 percent of CFL sales.<sup>4</sup>

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<sup>4</sup> To estimate CFL sales among nonproject-tracked stores, EcoNorthwest assumed that CFL sales for those stores were 25 percent of sales for project-tracked stores on a per-employee basis.



Since that analysis was conducted, about 500 stores have been added to the project database, which now includes more than 1,500 lighting stores.

ECOS obtains actual CFL sales figures from a sample of retailers contained in the CFL retailer database. For most delivery channels, ECOS uses the actual reported figures to impute sales for nonreporting stores. Supplemental sales data from utilities and buying groups, distributors, and manufacturers that are collected by ECOS in the course of implementing and tracking the Alliance's and other utility programs in the Northwest are used to "sanity check" imputed sales figures. The percentage of retailers supplying actual sales data (and the corresponding level of accuracy of the estimates) varies by delivery channel.

#### **Small Hardware and Specialty Lighting Stores**

ECOS obtains data from approximately 25 percent of the small hardware and specialty lighting stores that are in the project database. These stores are then grouped by activity level (active versus inactive, based on field personnel observance) and metro versus rural. Sales figures are then estimated for nonreporting retailers by applying reporting retailer sales based on metro/rural and active/inactive combinations. Supplemental data from utility POS records and 60 percent of the buying groups that serve this delivery channel are used to verify the accuracy of the estimates.

The EcoNorthwest estimate of the number of stores of this type compared to the number of stores in the database suggests that there are few stores of this type that sell CFLs that are not tracked by the project. Thus, ECOS' estimates for this channel are probably fairly accurate.

#### **Mass merchandisers**

ECOS obtains sales reports from 80 percent of the mass merchandisers in the project database. For one of the chain stores, sales are only reported for coupon sales. No estimates for nonreporting stores (the other 20 percent) are reported for this channel.

ECOS' estimates for this channel are likely understated since sales for the nonreporting stores are not imputed. Additionally, there are likely small amounts of sales left out of the estimate among the dozens or perhaps hundreds of stores left out of the project database, based on a comparison of the stores in the database and EcoNorthwest's assessment.

#### **National Do-It-Yourself (DIY) Stores**

The project database contains a comprehensive list of national DIY stores. Field representatives obtain sales records for a sample of stores comprising about 20 percent of national DIY stores in the Northwest. Stores are categorized as active and inactive based on field representative observation, and sales figures are applied to stores not in the sample based on the active/inactive determination.

Sales estimates for this channel are likely fairly accurate, given the reasonableness of the imputation method and the fact that all the DIY stores in the region are included in the estimation process.

### **Grocery Stores**

ECOS includes in their sales estimates only the CFLs sold by grocery stores that are associated with utility coupon programs. ECOS maintains that there is very little nonutility activity among this channel to date. Consumer CFL purchaser survey results corroborate this finding, with very few consumers reporting purchases at grocery stores. Still, estimates for this sales channel are likely understated since there may be sales of CFLs that occur outside the utility program. Stores may stock their shelves in anticipation of the promotion period and keep stock after the promotional period. Likewise, consumers may buy CFLs during the promotion without using coupons. Add to that the more than 800 grocery stores that reportedly sell CFLs (based on the EcoNorthwest analysis) that are in addition to the stores that participate in utility incentive programs. Sales among this channel may make a small but significant contribution to overall sales in the region.

### **Drug Stores**

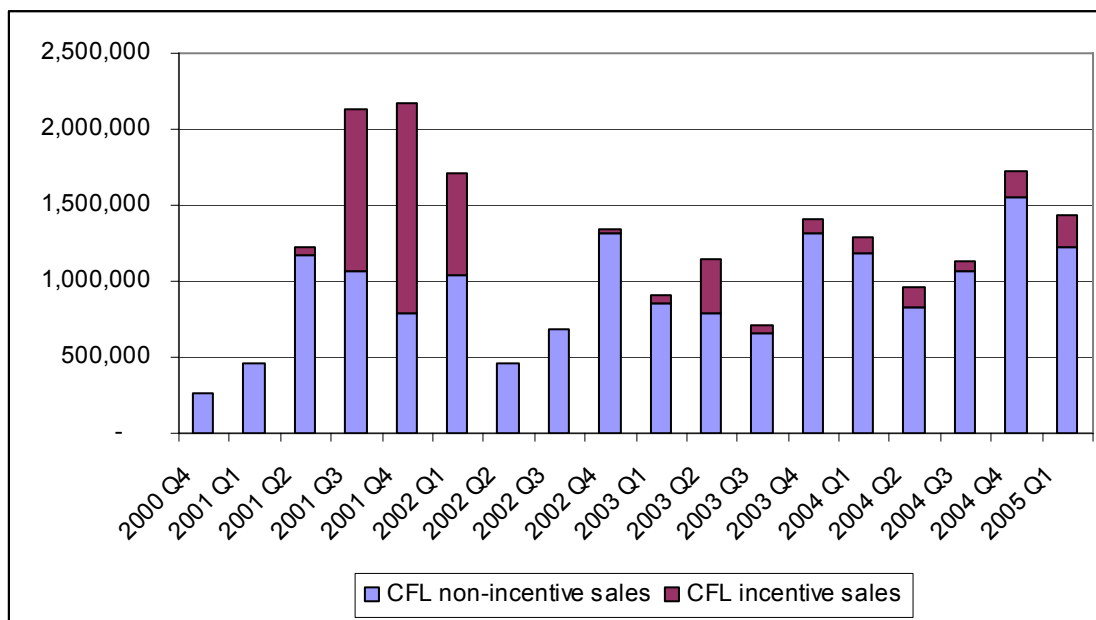
Sales for drug stores are included in ECOS' estimates only for stores that participate in utility incentive programs. Participating stores report their total CFL sales to ECOS as part of their participation agreement.

Like grocery stores, there is very little nonutility activity among this channel to date, according to ECOS. Consumer CFL purchaser survey results corroborate this assumption, with very few consumers reporting purchases at drug stores. Sales estimates for drug stores may be slightly understated, however, since there are upwards of 200 drug stores in the region that sell CFLs that are not tracked by the project based on EcoNorthwest's analysis.

### ***Supply-Side Estimates***

Figure 4-1 shows CFL sales for the region based on ECOS' estimates, broken down by utility incentive versus nonincentive sales. The figure shows the cyclical nature of lighting sales, with sales spiking in quarters 1 and 4 during the "lighting season" and dipping in quarters 2 and 3. Total sales peaked in 2001 likely due to consumer and retailer response to (1) rising energy costs resulting from the California energy crisis and (2) Alliance and utility-sponsored energy-efficiency programs. Annual nonincentive sales have increased gradually since 2002. Sales in 2004 were estimated at 5,097,690.

**Figure 4-1**  
**CFL Sales Estimates for the Northwest**

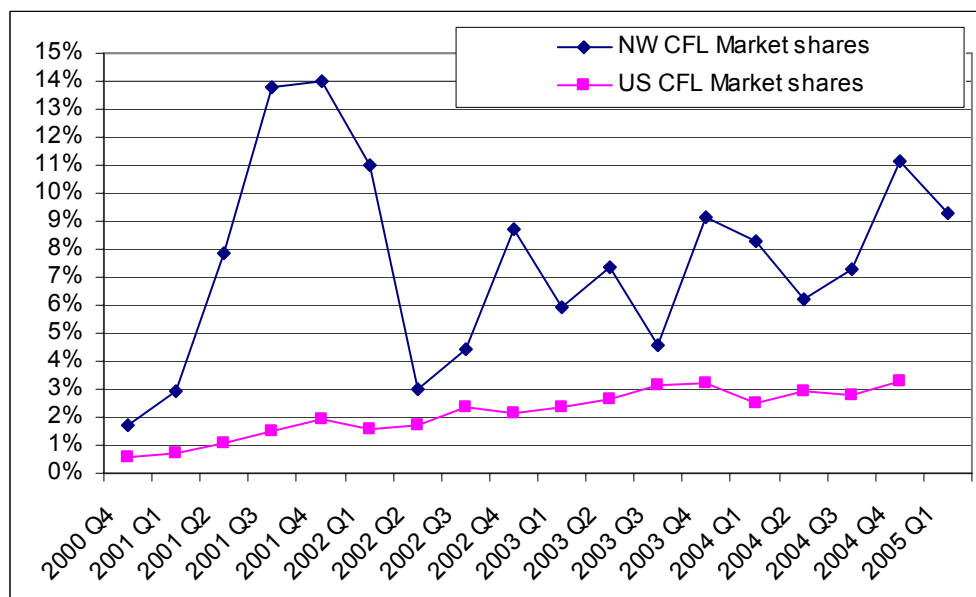


Source: ECOS CFL Sales Data Report for 2005 Q1

Figure 4-2 shows CFL market shares for the Northwest and for the U.S. as a whole. These market shares have been estimated using methods used in the prior project evaluation, which combine the CFL sales estimates described above with estimates of Northwest non-CFL sales. (The prior method uses national non-CFL sales estimates per capita from a national study of lighting sales data and applies them to the Northwest population.) As shown, through 2002 market shares in the Northwest exceeded U.S. market shares by a substantial margin. Market shares for 2004 are estimated at 8.2 percent.

The project might consider updating its methodology for calculating market shares to take into account the fact that non-CFL sales in regions like the Northwest with high levels of CFL sales are likely much lower than non-CFLs sales in other regions. For every CFL purchased, one or more (due to longer lifetime) non-CFL(s) does not need to be purchased. That is, the current methodology is probably understating Northwest CFL market shares because its assumption of non-CFL sales is too high (since they are based on national non-CFL sales.) A possible method for determining non-CFL sales for the Northwest is to apply non-CFL sales estimated for other regions similar to the Northwest with respect to CFL sales levels on a per capita basis (e.g., Wisconsin or California, where lighting tracking studies are conducted).

**Figure 4-2**  
**CFL Market Share Estimates for the Northwest and U.S.**



**Sources: ECOS CFL Sales Data report for 2005 Q1, U.S. Census Population Estimates for 2004 and Itron California Lamp Report 2004**

#### **4.1.3 Demand-Side Assessment**

As stated above, another method for assessing CFL sales is to collect consumer self-reported purchase data. The lighting purchaser survey asked purchasers how many CFLs they had purchased over the past year. Respondents were instructed to count each bulb within a package separately. Since the survey was conducted in November of 2004, the resulting number of purchases roughly covers 2004.

Consumer self-reported results from the lighting purchaser survey are shown in Table 4-1. The first column of the table shows the average number of CFLs reportedly purchased in 2004. The second column is the average purchases across all Northwest consumers, and the third column shows the total CFL purchases for the region. The final column is an adjusted purchase total for the region based on the ratio of self-reported purchases to actual CFL sales from a California residential lighting evaluation.<sup>5</sup> In that prior study, reliable CFL sales estimates from the Market Share Tracking Study (Itron 2001) were compared with consumer self-reported purchase data. Self-reported purchases were overstated by a factor of 4 when compared with the Market Share Tracking Study. When sales estimates from the Market Share Tracking Study were combined with utility-provided sales for club stores, which were not included in the study, self-reported purchases are overstated by a factor of 2.

<sup>5</sup> Phase 4 California Residential Lighting and Appliance Program Market Effects Study (KEMA 2002).

**Table 4-1**  
**Consumer Self-Reported 2004 Purchases**

Avg. Number of CFLs Purchased (Base= purchasers)	Avg. Number of CFLs Purchased (Base= population)	Total CFLs Purchased for the Region	Adjusted CFLs Purchased Range
5.7	2.0	23 million	5.5 – 11 million

n=427

#### **4.1.4 Integrated CFL Sales Assessment**

The supply-side estimate of 5 million CFLs sold in 2004 and the upper bound of the consumer estimate of 11 million provide the lower and upper estimates for sales in the region. The supply-side estimate, while conservative, should be viewed with a high degree of confidence as compared to the self-reported value. EcoNorthwest's analysis suggested that ECOS' sales estimates were understated by a factor of 10 percent. However, this analysis did not use actual CFL sales from nonreporting stores (i.e., surveyed stores were not asked about their actual CFL sales).<sup>6</sup> Nevertheless, in reviewing EcoNorthwest's characterization of the population of stores as compared to the project database and taking into account the margin of error associated with the ECOS' estimates for each delivery channel, we concluded that ECOS' estimates are probably understated by about 500,000 CFLs, which is 10 percent, equivalent to the results of EcoNorthwest's analysis. The resulting estimate of 5.6 million is close to the low end of the consumer self-reported purchases range.

The Alliance's CFL sales goal for 2004 was 4.8 million CFLs, which was based on a 1-million increase over the 2003 ECOS sales estimate. Thus, for goal tracking purposes, the 2004 ECOS estimate (5.1 million) should be used with the understanding that sales are probably understated by about 10 percent. In future years, if the grocery and drug store channel increases sales of CFLs, as is likely given trends in other regions,<sup>7</sup> the project will need to explore methods for tracking their sales.

#### **4.1.5 Retailer Trends in CFL and ENERGY STAR Fixture Sales**

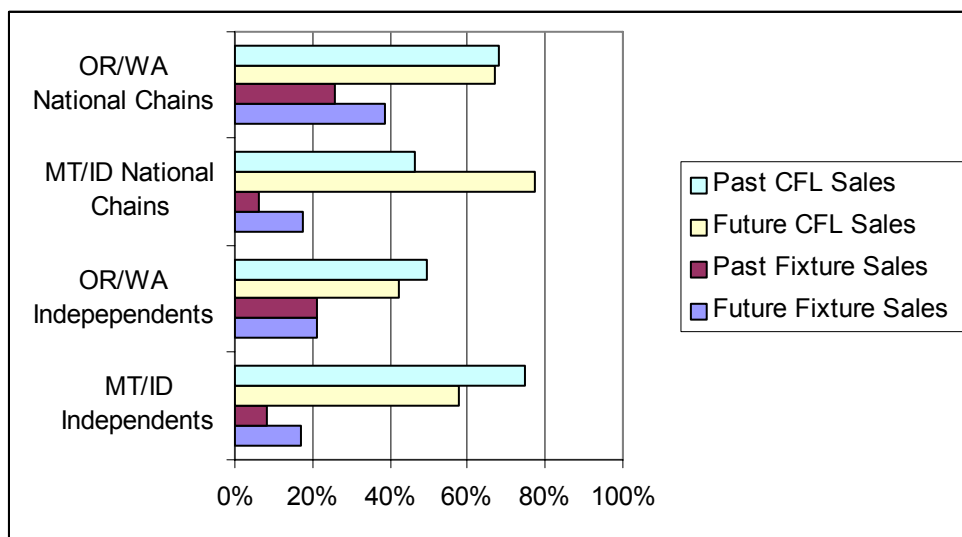
Figure 4-3 below shows retailers' perspectives on the past year's CFL and ENERGY STAR fixture sales and their predictions of the coming year's sales. The bars show the percentage of retailers that have seen or expect to see increases in sales. The remainder, for the most part, have seen or expect to see no change. (A small minority reported decreases in sales.)

<sup>6</sup> Instead, it was assumed that nonreporting stores sold 25 percent fewer CFLs than reporting stores, on a per employee basis by store type.

<sup>7</sup> In California, where the utilities have offered large-scale statewide POS rebates, grocery and drug stores have sold a significant volume of CFLs.

Overall, just under 60 percent of retailers reported an increase in the past year's CFL sales over sales from 2003. A slightly higher percentage expects to see an increase in CFL sales for 2005. The results are similar for fixture sales, when averaged over only those stores that sell ENERGY STAR fixtures. Fixture sales still dramatically trail CFL sales in all areas.

**Figure 4-3**  
**Retailer Reported Increases in Past and Future CFL and ENERGY STAR Fixture Sales**



n=43, 25, 21, and 11 for the four state/store type categories shown above, respectively

MT=Montana, ID=Idaho, OR=Oregon, MT=Montana, ID=Idaho

## 4.2 ENERGY STAR APPLIANCE AND UHE CLOTHES WASHER MARKET SHARES

First, we discuss the project's approach to reporting on ENERGY STAR appliance market shares for the Northwest. Then we discuss the project's estimates of UHE clothes washer shares of ENERGY STAR clothes washer sales. We compare these estimates to retail store managers' reports of UHE shares. Finally, we conclude with retail store manager opinions regarding trends in ENERGY STAR appliance sales. Although the Alliance's project is currently focused on clothes washers (and not the other three appliances), the project tracks ENERGY STAR sales and market shares for all four appliances, as it has addressed these products in prior years.

### 4.2.1 ENERGY STAR Appliance Market Shares

Tracking of appliance sales and ENERGY STAR appliance (clothes washers, dishwashers, refrigerators and room air conditioners) market shares are produced for the region by the Alliance's implementation contractor, PECCI. The sources for the sales and market share data are D&R International and the Association of Home Appliance Manufacturers (AHAM). D&R provides quarterly market share estimates for ENERGY STAR-qualified appliances by state.

These estimates are based on sales reported by national retail outlets that agree to participate in the national ENERGY STAR program.

AHAM provides annual estimates of total appliance sales by state. PECI divides this annual estimate into equal quarterly estimates and then develops estimates of sales for each appliance by state by applying the D&R-based market share percentage to the quarterly total sales estimate. This approach implicitly assumes that ENERGY STAR nonpartner market shares are the same as partner market shares. PECI maintains that independent stores (i.e., nonpartner stores) have the same market shares as national stores. They base this assumption on their review of utility records from independent stores to which they have access during utility promotions.

Figure 4-4 shows the ENERGY STAR clothes washer market share trends for the entire U.S. and for the Northwest. As shown, market shares of ENERGY STAR clothes washers have steadily increased over time. A sharp decline in Q1 2004 corresponds to an tightening of the ENERGY STAR modified energy factor specification. The Northwest market shares have consistently exceeded the national shares by about 10 percent. Currently, shares are just below 40 percent for the Northwest.

**Figure 4-4**  
**U.S. and Northwest ENERGY STAR Clothes Washer Market Shares 2000-2004**

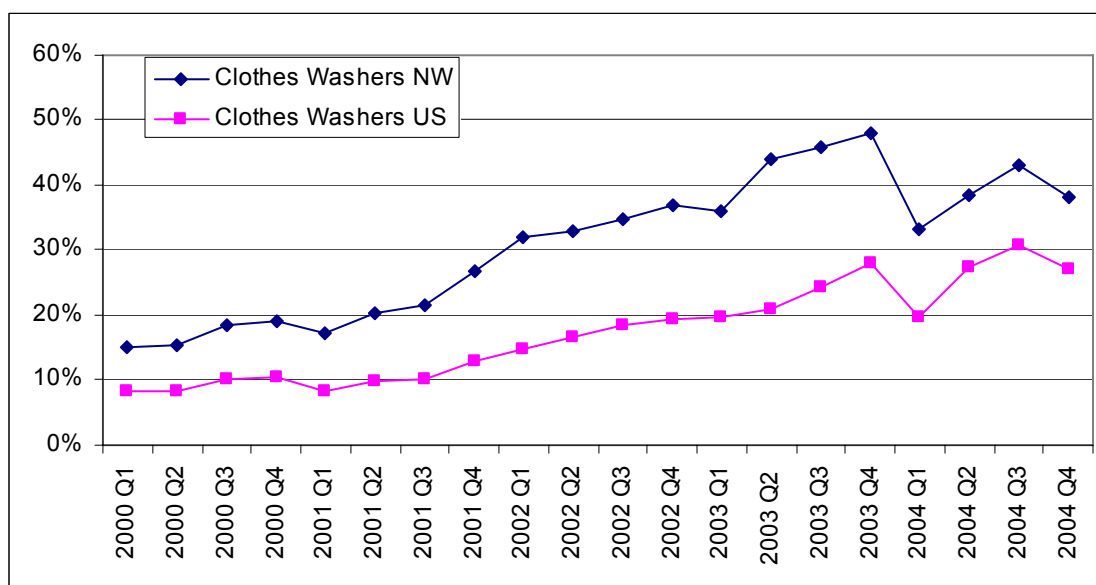


Figure 4-5 shows the market shares for ENERGY STAR refrigerators. Shares dropped suddenly and significantly in Q1 2001 due to a change in ENERGY STAR standards in January 2001. The Northwest's market shares have consistently exceeded the nationwide shares by several percentage points and are currently at over 40 percent.

**Figure 4-5**  
**U.S. and Northwest ENERGY STAR Refrigerator Market Shares 2000-2004**

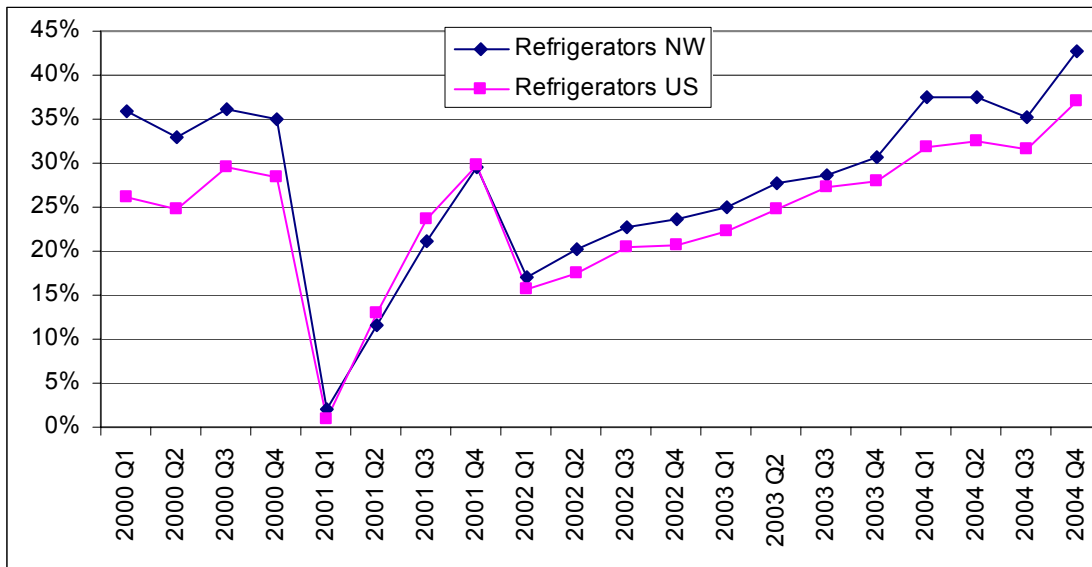


Figure 4-6 shows the ENERGY STAR dishwasher market shares for the U.S. and the Northwest. Shares for both have steadily increased over time, and Northwest shares gained some ground on the nationwide shares in 2004. Market shares are currently near 90 percent.

**Figure 4-6**  
**U.S. and Northwest ENERGY STAR Dishwasher Market Shares 2000-2004**

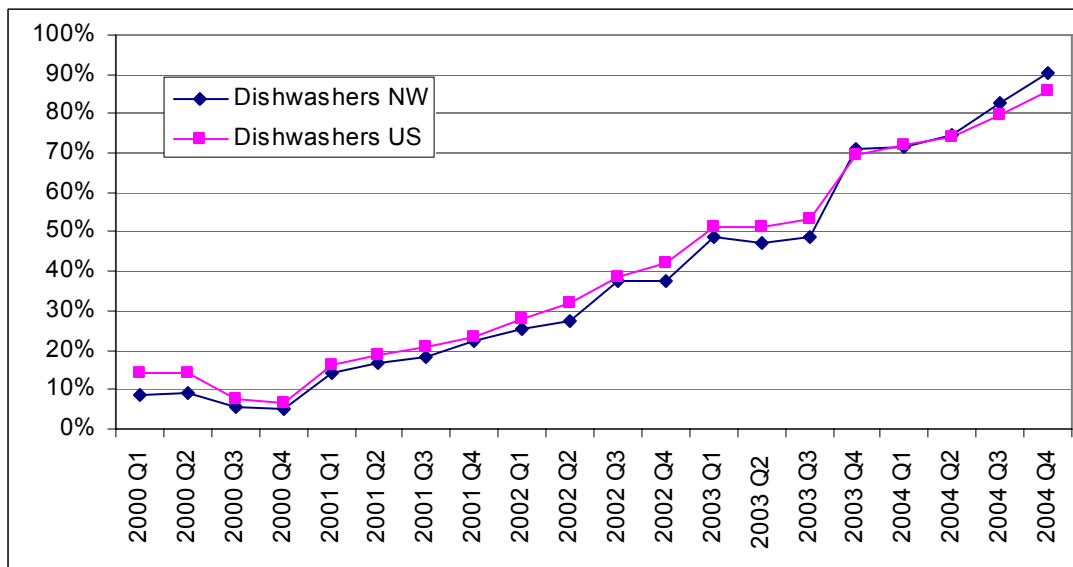
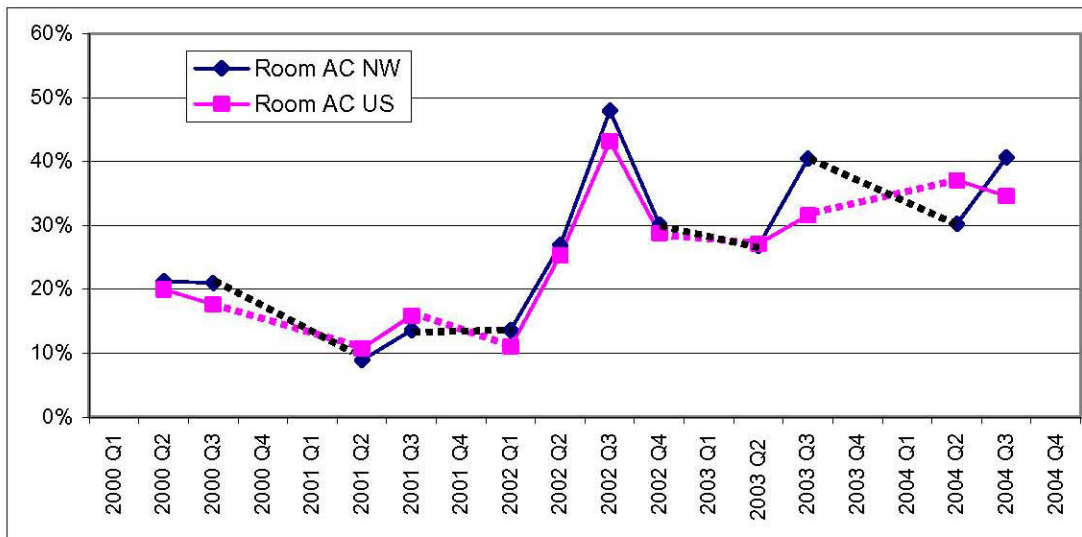


Figure 4-7 shows ENERGY STAR market shares for room air conditioners (Room ACs). As shown, the latest quarterly report shows the Northwest share at 40 percent versus 35 percent



nationally. Note that D&R reports on market shares for Room ACs only for the second and third quarters of each year.

**Figure 4-7**  
**U.S. and Northwest ENERGY STAR Room AC Market Shares 2000-2004**



Note: The dotted lines have been added to smooth trend lines.

The Alliance's goal is to maintain the Northwest's lead over the national market share for ENERGY STAR clothes washers. As shown in Figure 4-8, the region is comparable to the national average shares for all appliances except for clothes washers, where the region exceeds the national shares by a significant margin.

**Figure 4-8**  
**U.S. and Northwest ENERGY STAR Appliance Market Shares for 2004**

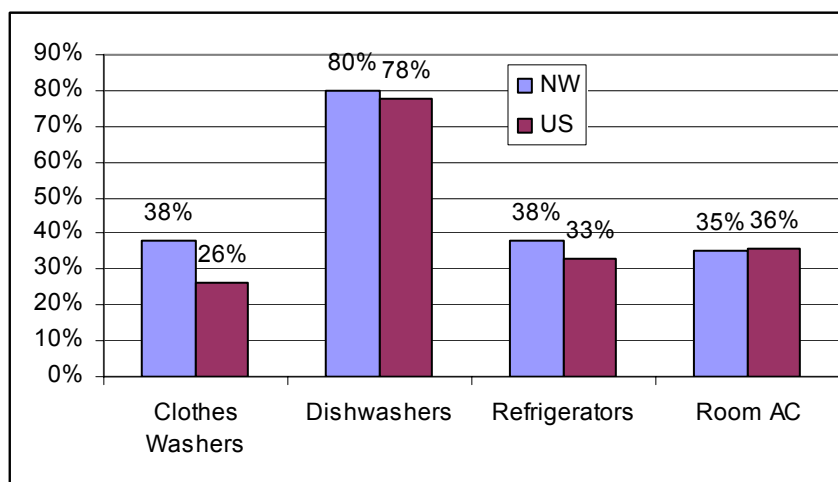
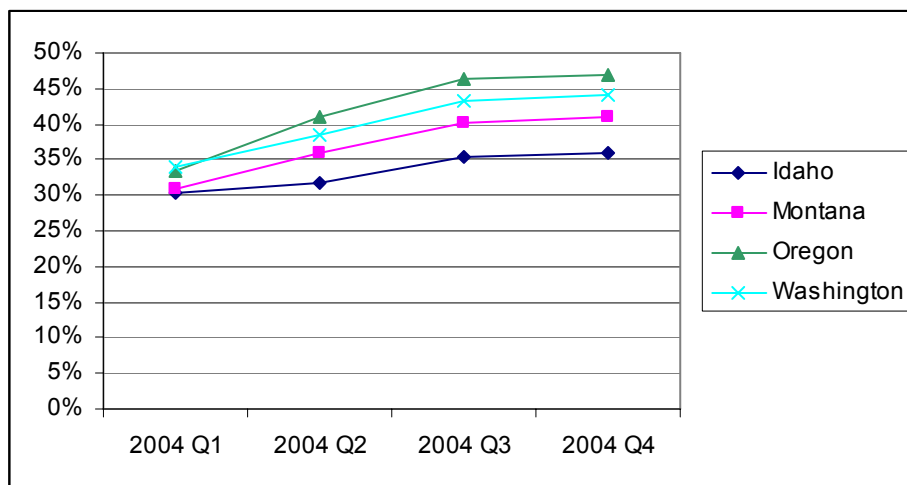


Figure 4-9 shows the market shares for clothes washer by state. As shown, Oregon and Washington market shares are higher than shares for the other 2 states.

**Figure 4-9**  
**2004 ENERGY STAR Clothes Washer Market Shares by State**



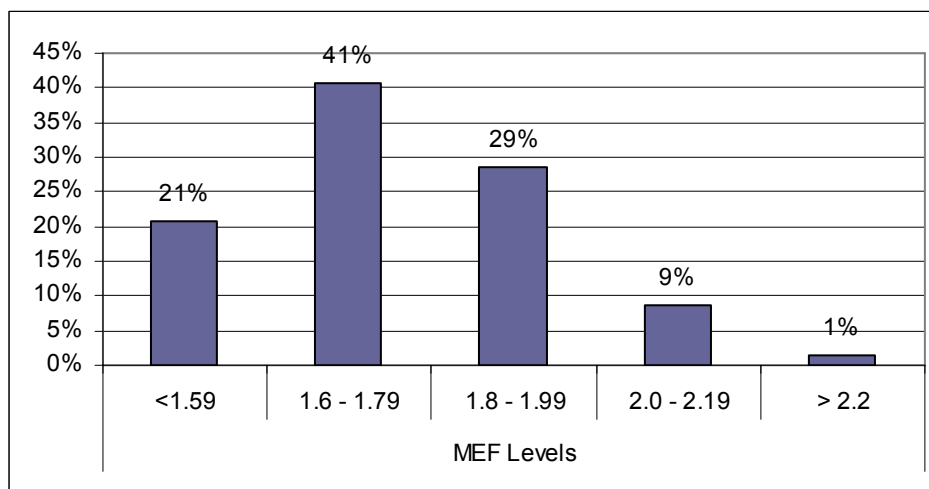
#### 4.2.2 UHE Clothes Washer Market Shares

##### *Project Estimates*

PECI also tracks an indicator of the region's market share of UHE clothes washers. Many of the region's utilities participate in the annual national ENERGY STAR appliance promotion,<sup>8</sup> and PECI supports both the utilities and retailers in tracking and processing of appliance rebates. From utilities that are running promotions (covering 50 to 75 percent of the region's residential customers), PECI tracks the number of rebates paid for both ENERGY STAR and UHE clothes washers. These data are used to generate promotion-period market shares for UHE clothes washers. Figure 4-10 shows the distribution of the MEF of rebated washers sold during the 2004 DYS promotion. As shown, 39 percent of the washers rebated had an MEF of 1.8 or greater (i.e., UHE washers). The Alliance's goal is to reach 50 percent UHE market share by 2007. While UHE market shares might be higher during promotion periods since 13 utilities and the Energy Trust of Oregon offered a higher rebate for UHE v. ENERGY STAR washers in 2004 (representing almost 60% of the population), these results indicate that a significant portion of ENERGY STAR clothes washer sales are UHE washers. The Alliance may consider using its connections with retailers to gather more representative data on UHE shares in order to track its success in meeting its UHE market share project goal.

<sup>8</sup> Clothes washer that were rebated during the 2004 spring promotion accounted for approximately 8 percent of the annual ENERGY STAR clothes washers sales for the region. (Source: DYS tracking database records compared to PECI estimates of ENERGY STAR appliance sales.)

**Figure 4-10**  
**MEF of Rebated Washer Sold During 2004 DYS Promotion**

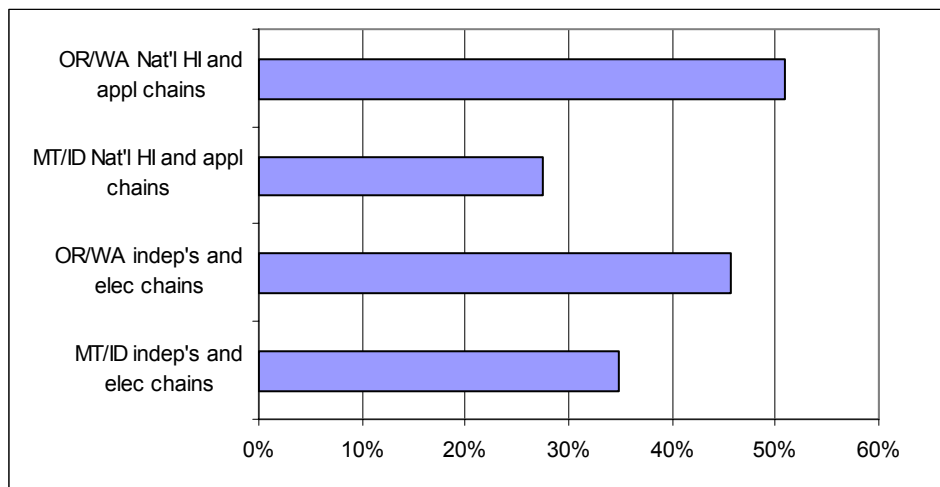


### ***Retailer Estimates***

During the store manager survey, retailers were asked to estimate the percentage of their ENERGY STAR clothes washer sales that are of UHE units. The survey results indicate that about 42 percent of ENERGY STAR clothes washer sales are UHE units. This result is very close to the project's promotion market share estimate of 39 percent. Note that this survey was fielded in the spring after the clothes washer promotion, so these results may be more reflective of the promotional sales than annual sales. Figure 4-11 shows the results by store type (home improvement and appliance store chains versus independent and home electronic stores) and region (Oregon and Washington versus Montana and Idaho).<sup>9</sup> Oregon and Washington retailers report a higher share than Montana and Idaho retailers. Note that this regional difference may be explained in part by the use of tiered rebates (which are higher for UHE washers) in Washington and Oregon. Only four small Idaho utilities and no Montana utilities offered a tiered clothes washer rebate structure in 2005, while in the other states nearly 65 percent of the population was offered tiered rebates.

<sup>9</sup> Retailer survey data were analyzed by several store type and region variables. These categories were found to be the most explanatory of differences across store type and region. These results are described in more detail in Sections 6 and 7, where the remainder of the appliance retailer results are presented.

**Figure 4-11**  
**Retailer Reported Share of ENERGY STAR Sales that are UHE**

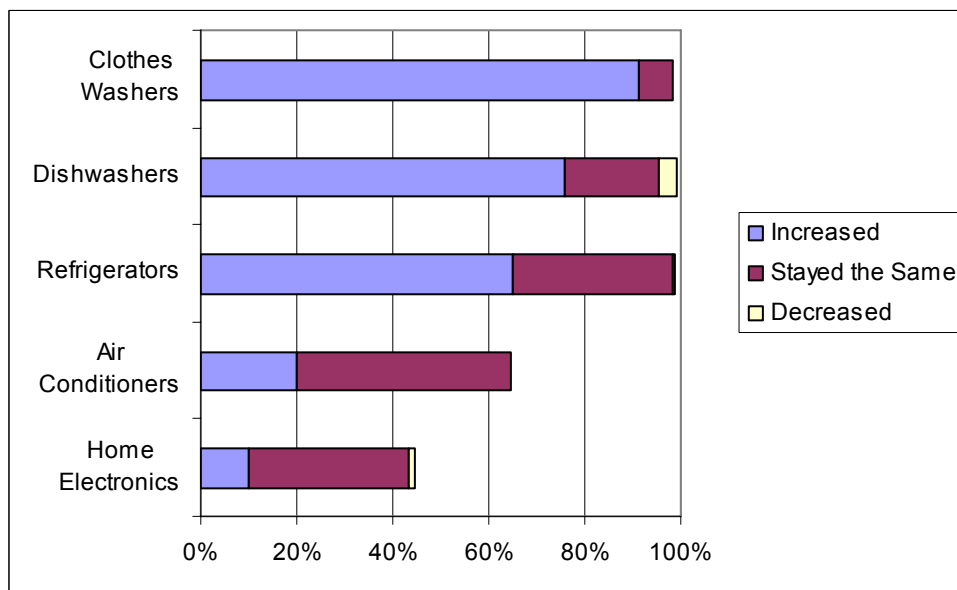


n=32, 17, 32, and 19 for the four bars shown above, respectively

#### 4.2.3 Retailer Trends in ENERGY STAR Appliance Sales

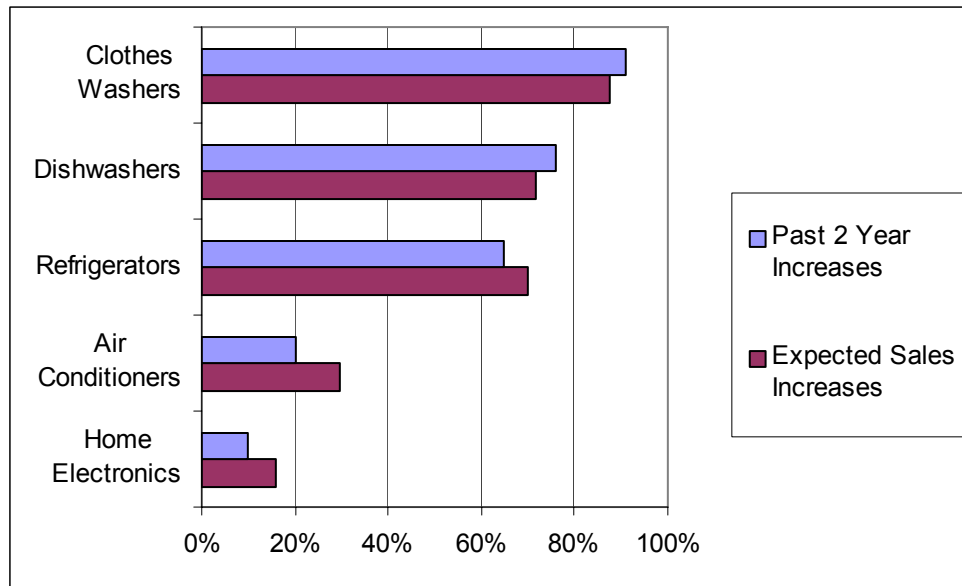
As part of the retailer survey, we asked retailers about past and future trends in ENERGY STAR appliance sales. Across all appliances, retailers report that sales of ENERGY STAR-qualified appliances have either increased or remained constant (Figure 4-12). There is a minor perception that ENERGY STAR dishwasher sales have decreased (4 percent of retailers) but the market is strong from the retailer perspective.

**Figure 4-12**  
**Retail Market Change for ENERGY STAR Appliances over the Last 2 Years**



Looking forward (see Figure 4-13), about the same percentage of retailers are expecting ENERGY STAR appliance sales increases as those that experienced increases over the past 2 years. This result suggests that retailers in general expect to see a continuation of current trends.

**Figure 4-13**  
**Expected ENERGY STAR Appliance Sales Increases Compared to Past 2 Year Increases**



This section presents the results on lighting from one consumer survey and two supplier surveys:

- **Consumer Lighting Purchaser Survey.** Nearly 1,600 Northwest consumers were surveyed about their CFL awareness and purchasing behavior in November of 2004. Survey data were compared to prior lighting purchaser surveys, and multivariate regression models were developed to explore drivers of CFL awareness, prior purchases, satisfaction, and future purchase intentions.
- **Lighting Retailer Store-Level Manager Survey.** We analyzed results from 100 lighting retailer surveys by store type and region (i.e., state and east or west of the Cascades) and where we found significant differences, we report them by these categories. We also compared results to the prior retailer survey and showed changes over time where such comparisons were possible. Note that about half of the questions in the retailer survey relate to the process evaluation and, as such, these results are presented in Section 7.
- **Lighting Retailer Shelf Survey.** A total of 73 lighting retailers were inventoried with respect to light bulbs and fixtures in the spring of 2005. The survey data were analyzed by region and store type. We found significant differences by store type, and therefore presented results at the store type level. The bulb diversity results varied significantly by state, and these by state results are shown in the Appendix.

These survey results measure market progress in meeting the following project goals:

- Increase customer product knowledge and adoption
- Improve customer perception of product quality
- Increase availability, selection, and affordability of lighting products in the region
- Strengthen ENERGY STAR branding.

First, we present the consumer survey results, which provide customer awareness and purchase rates, satisfaction rates with CFLs, future purchase intentions, and influence of the ENERGY STAR label on purchases. Next, we present results from the shelf survey on product availability, diversity, and affordability for CFLs, ENERGY STAR CFLs, and ENERGY STAR fixtures. Finally, we discuss retail store manager survey results on trends in sales and stocking and drivers of and barriers to increasing CFL product sales.

## **5.1 CONSUMER RESULTS**

In this section, we highlight the key findings from the consumer lighting purchaser survey that measure lighting market indicators that relate to consumers, specifically:

- Compact fluorescent lamp (CFL) awareness
- CFL purchases
- Customer satisfaction with CFLs
- Future CFL purchase intentions
- Influence of ENERGY STAR label.

The population was categorized into mutually exclusive groups based on their experience with CFLs (see Figure 5-1). The purpose of this exercise was to estimate the size of and further characterize various purchaser/nonpurchaser categories to understand how to cost-effectively increase CFL market shares over time. The figure breaks down the population into CFL experience categories, with roughly equal proportions of consumers unaware of CFLs, aware but have not yet used them, and those who have purchased CFLs. CFL purchasers are further categorized by whether they have purchased CFLs on only one occasion, are a repeat purchaser but not an advanced adopter, or a repeat purchaser who is an advanced adopter. A repeat purchaser was defined as an advanced adopter if they were likely to purchase CFLs in the coming year without an incentive and likely to replace CFLs that burn out with new CFLs.<sup>10</sup>

**Figure 5-1**  
**Consumer Awareness and Purchaser Categories**

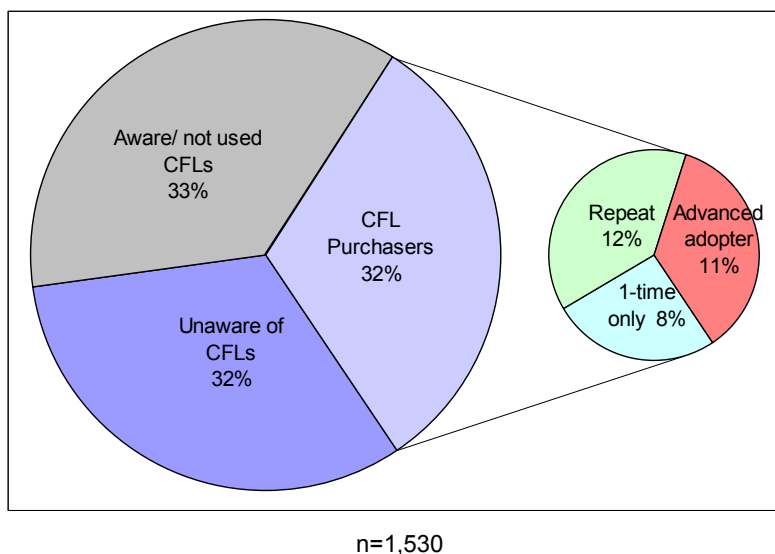
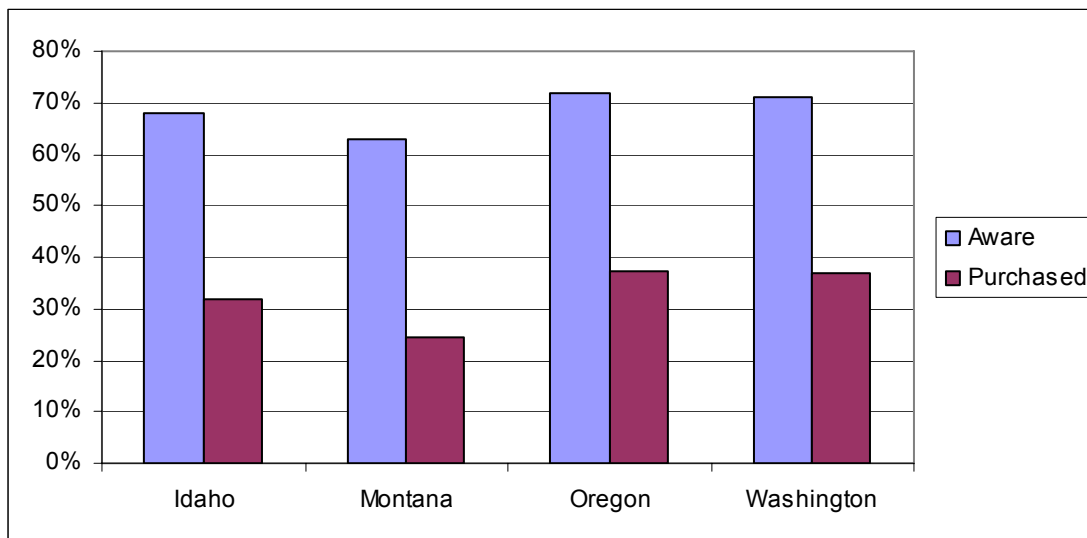


Figure 5-2 shows the awareness and purchase rates by state. As shown, awareness and purchase rates in Montana and Idaho are lower than rates in Oregon and Washington.

<sup>10</sup> Likelihood is based on a scale from 1 to 5, with 1 being not at all likely and 5 being very likely. A repeat purchaser was identified as an advanced adopter if their likelihood of purchasing CFLs in the coming year and their likelihood of replacing burnt-out CFLs with CFLs were both either 4 or 5.

**Figure 5-2**  
**Awareness and Purchase Rates by State**



### 5.1.1 CFL Awareness

Two-thirds of households in the Northwest are familiar with CFLs. Most consumers say they are aware of CFLs as a result of advertising (via television, newspaper and news programs, and the Internet), followed by word of mouth and retailer point-of-purchase displays.

Table 5-1 shows the modeling results for consumer awareness of CFLs. These results indicate which factors appear to affect awareness and which factors appear not to, and for those factors that appear to affect awareness, their relative importance. The survey was designed primarily to explore CFL purchaser behavior. Hence, only demographic data, which were collected from all respondents, including those unaware of CFLs, were able to be included in the analysis of CFL awareness.

A college education was the most important factor affecting whether or not a consumer is aware of CFLs, followed by shopping frequently at stores that tend to carry CFLs, living in a high-publicity geographic area as defined by the national awareness of ENERGY STAR for 2004 study<sup>11</sup> (KEMA Inc. 2004), and owning a home. Homeowners may be more likely to pay attention to energy-efficiency messages than renters because they have a greater financial motivation than renters, who may move around more and/or have a lower than average electricity bill. Educated consumers may have more opportunities to be exposed to energy-efficiency messages in the news and on the Internet. Shopping frequently at stores that tend to carry CFLs (home stores, discount stores, or hardware stores) or living in a high-publicity area is likely to increase exposure to energy-efficiency messages. Household income and respondent

<sup>11</sup> The definition of high publicity is an active local ENERGY STAR program *recently* sponsored by a utility, state agency, or other organization for 2 or more continuous years. The activities must include *sustained* promotions and publicity from nonfederal activities. (KEMA Inc. 2004)



gender were not found to affect awareness of CFLs (i.e., the coefficients on these variables were not significantly different from 0 at the 10-percent level or better).

**Table 5-1**  
**CFL Awareness Modeling Results**

Potential Drivers	P-value	Direction		Rank Order
		Expected	Estimated	
Geo-demographic characteristic				
Homeowner**	0.0329	?	↑	4
College graduate***	<0.0001	?	↑	1
High income	0.8663	?		
Frequent shopper***	0.0055	↑	↑	2
Gender	0.1601	?		
EE programs and messages				
Live in high publicity area**	0.0137	↑	↑	3

\*\*\* Coefficient significantly different from 0 at the 1-percent level.

\*\* Coefficient significantly different from 0 at the 5-percent level.

\* Coefficient significantly different from 0 at the 10-percent level.

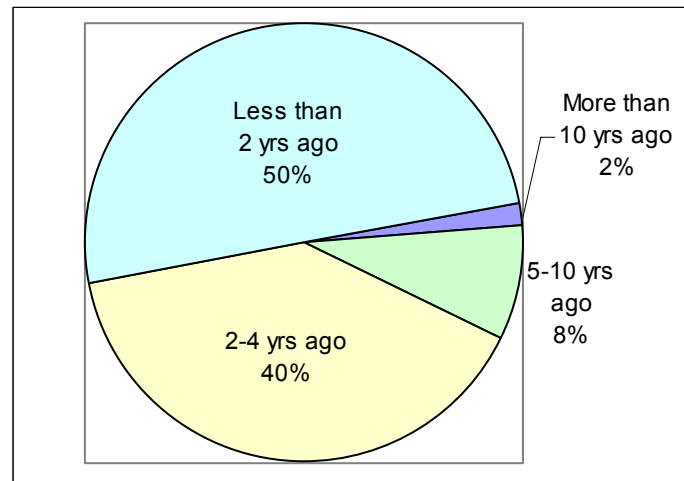
### 5.1.2 CFL Purchases

As shown in Figure 5-1, 32 percent of consumers in the Northwest have purchased CFLs. As shown in Figure 5-3, most of these purchases have occurred in the last 5 years. Figure 5-4 shows that most CFLs are bought at home centers and discount department stores, with buying clubs and local hardware stores also selling a significant amount of CFLs. A small portion of purchasers have bought CFLs at supermarkets and drug stores.

Figures 5-5 and 5-6 show the reasons for purchasing and not having purchased CFLs. The major reasons consumers in the Northwest purchase CFLs are to conserve energy and reduce their electricity bill. The major barriers to purchases are lack of awareness, the higher cost of CFLs versus incandescent bulbs, and lack of information. Other barriers include insufficient availability and diversity of CFLs, dissatisfaction with CFL light quality, and lack of concern about energy efficiency in general.

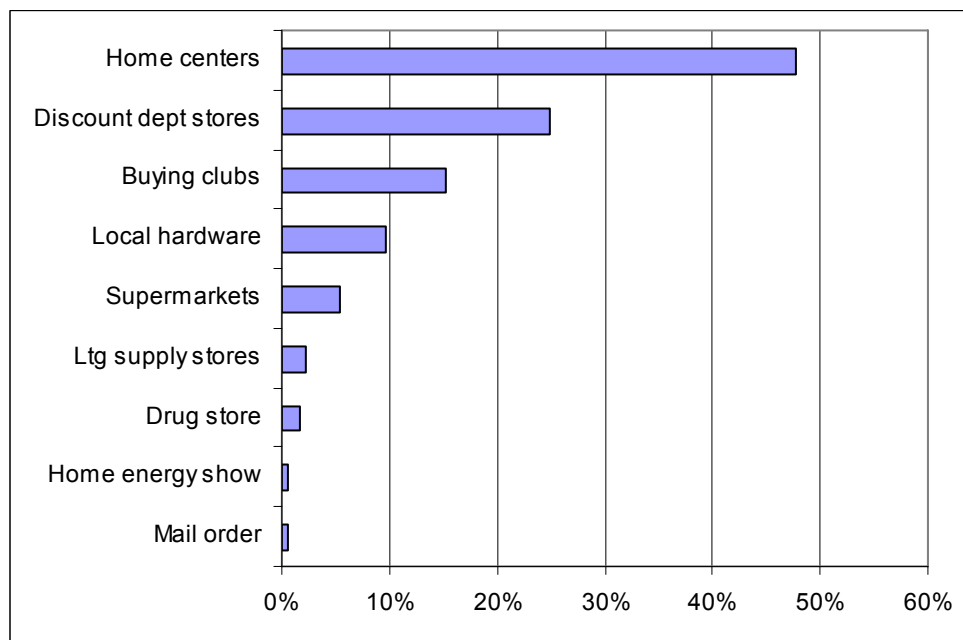
Figures 5-5 and 5-6 show the reasons for purchasing and not having purchased CFLs. The major reasons consumers in the Northwest purchase CFLs are to conserve energy and reduce their electricity bill. The major barriers to purchases are lack of awareness, the higher cost of CFLs versus incandescent bulbs, and lack of information. Other barriers include insufficient availability and diversity of CFLs, dissatisfaction with CFL light quality, and lack of concern about energy efficiency in general.

**Figure 5-3**  
**First Time CFLs were Purchased**



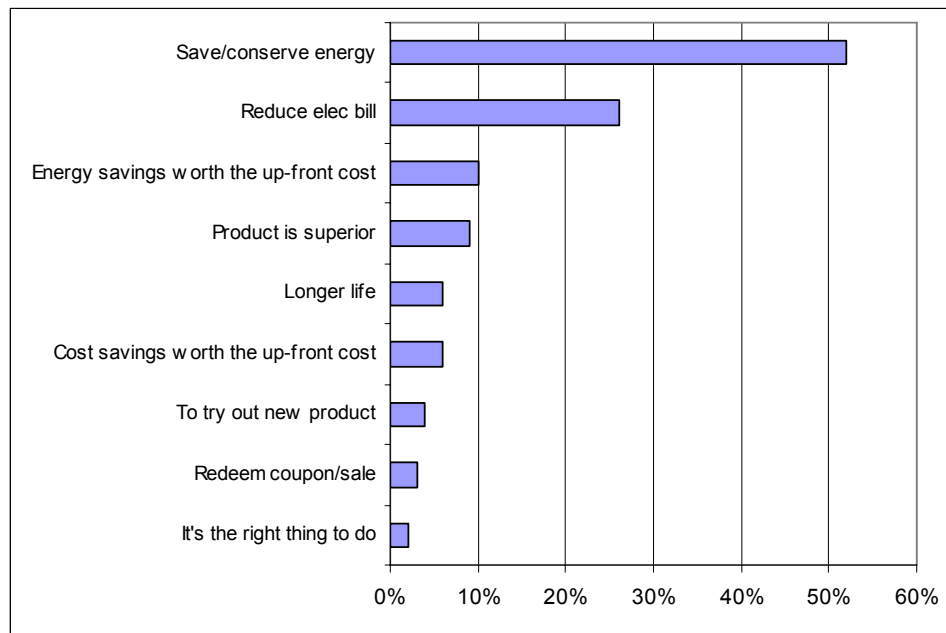
n=554

**Figure 5-4**  
**Where CFLs Have Been Purchased**



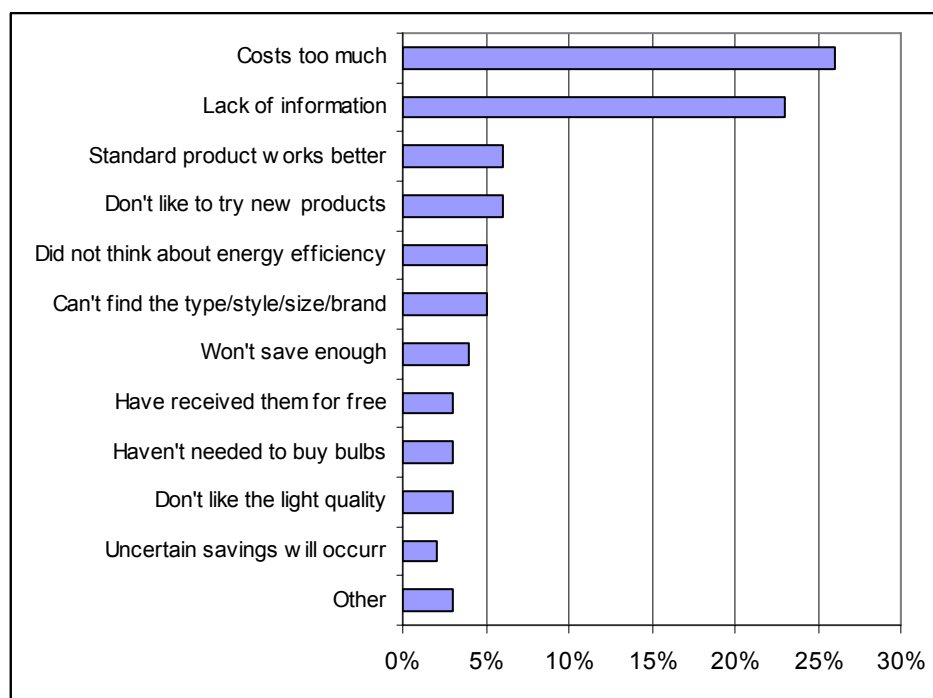
n=554

**Figure 5-5**  
**Reasons for Purchasing CFLs**



n=427

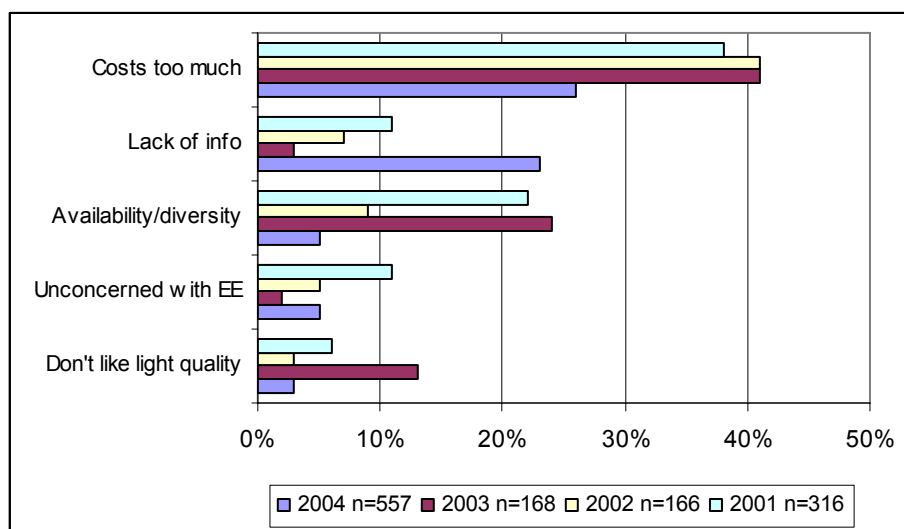
**Figure 5-6**  
**Reasons for Not Purchasing CFLs**



n=511

Figure 5-7 shows the barriers to purchasing CFLs over time. As shown, first cost is less of a barrier relative to the other barriers than it was in prior years,<sup>12</sup> while lack of information is more of a barrier. Light quality as a barrier peaked in 2003 and has come down to prior levels in 2004.

**Figure 5-7**  
**Reasons for Not Purchasing CFLs – Over Time\***



\*Comparing only "like" categories

Sources: ECONorthwest 2004 and KEMA 2005

Table 5-2 shows the modeling results for prior CFL purchases. Receiving a CFL coupon in the mail was the most important factor affecting whether or not an aware consumer has purchased CFLs, followed by owning a home, and a college education. It is reasonable that coupons would drive some level of purchases since the coupons made consumers aware of CFLs if they were not already and helped to offset their higher first cost. Homeownership may motivate a consumer to save energy more than if they were renting a home, and being educated may allow them to understand the concept of payback, making them more willing to pay the higher first cost.

Potential factors not found to affect CFL purchases in the past are shopping frequently at stores that tend to carry CFLs, respondent gender, receiving a free CFL in the mail, and living in a high-publicity area. Thus, while home ownership and a college education appear to drive both CFL awareness and prior purchases, energy-efficiency program publicity appears to drive only awareness. Also, coupons were found to be effective in encouraging CFL purchases in the past, while mailed CFLs were not.

<sup>12</sup> Note that the purchase rate has likely increased over this time period, so the base of respondents may have decreased.

**Table 5-2**  
**CFL Purchase Model Results**

Potential Drivers	P-value	Direction		Rank Order
		Expected	Estimated	
Geo-demographic characteristic				
Homeowner***	<0.0001	↑	↑	2
College graduate***	0.0026	?	↑	3
High income	0.5348	↑		
Frequent shopper	0.4487	↑		
Gender	0.2702	?		
EE programs and messages				
Received a coupon***	<0.0001	↑	↑	1
Received a mail CFL	0.3206	↑		
Live in high publicity area	0.1421	↑		

\*\*\* Coefficient significantly different from 0 at the 1-percent level.

\*\* Coefficient significantly different from 0 at the 5-percent level.

\* Coefficient significantly different from 0 at the 10-percent level.

### 5.1.3 Customer Satisfaction with CFLs

General satisfaction with CFLs is presently high among CFL purchasers in the Northwest. On a 10-point scale, with 1 being not at all satisfied and 10 being very satisfied, the mean general satisfaction rating based on the 2004 survey is 7.6. This result is similar to the mean general satisfaction ratings from the 2001 through 2003 surveys. However, the distribution of ratings has changed over time (see Figure 5-8). Between 2001 and 2003, the proportion of CFL purchasers that rated their general satisfaction a 9 or a 10 declined from 46 to 29 percent. In 2004, the proportion of CFL purchasers that rate their general satisfaction a 9 or 10 is back up to 2001 levels.

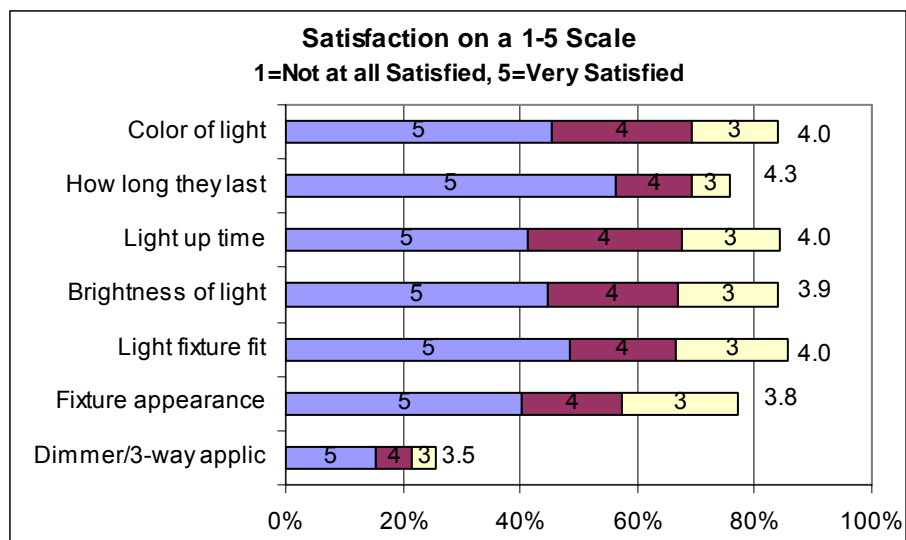
**Figure 5-8**  
**General Satisfaction with CFLs Over Time**



Sources: ECONorthwest 2004 and KEMA 2005

Figure 5-9 shows satisfaction with specific CFL attributes, with purchasers giving high ratings for all attributes. With regard to the low percentage of high ratings for dimmers and three-way applications, the average rating is high once “not applicable” is removed. This result suggests that most purchasers have not had experience with these CFL applications.

**Figure 5-9**  
**Satisfaction with Specific CFL Attributes**



n=554

Table 5-3 presents another indicator of satisfaction, future CFL replacement intentions. As shown, nearly two thirds of current CFL users intend to replace any burnt-out CFLs with new CFLs. Only 13% reported they are somewhat or not at all likely to do so.

**Table 5-3**  
**Likelihood of Replacing Burnt-out CFLs with CFLs**

Likelihood	Percentage of Respondents
1=Not at all likely	10%
2	3%
3	10%
4	11%
5=Very Likely	64%
Don't know	2%
Mean	4.2
n	461

Table 5-4 shows the disposition of CFLs at purchaser homes, with 76 percent of bulbs installed, 3 percent removed, and 21 percent being stored for later use. The installation rate is in line with the 2003 rate, which was 77 percent, a slight drop from the 2002 survey, which was 86 percent.<sup>13</sup>

**Table 5-4**  
**Bulb Disposition for Purchaser Homes**

<b>Disposition of Bulb</b>	<b>Average number of bulbs per home</b>	<b>% of bulbs per home</b>
Bulbs installed per purchaser home	6.5	76%
Bulbs removed per purchaser home	0.3	3%
Bulbs stored per purchaser home	1.8	21%
Total number of bulbs purchased/received per home	8.6	100%
n	554	

Note that one of the project's criteria for success was based on CFL removals – and of those, the percentage that were replaced with incandescent bulbs. The last evaluation of the project's lighting program component found that only 30 percent of removed CFLs were replaced with CFLs – the remainder were replaced with incandescent bulbs. This evaluation found that so few CFLs are being removed (only 3 percent of CFLs as shown in Table 5-4), that the CFL replacement rate for these CFLs is inconsequential.

Instead, we suggest that the Alliance consider tracking two other metrics, which concern product quality and CFL replacement intentions. First, the intention to replace burn-out CFLs in the future with new CFLs (as opposed to non-CFLs.) Since CFLs last so long, future stated intentions are an easy way to currently address quality issues and their impact on CFL replacement intentions. While stated intentions are notoriously unreliable for predicting actual behavior, for purposes of tracking changes over time they are useful. Second, tracking overall CFL removals (again, which are currently 3%) is recommended in order to monitor quality and its impacts on current behavior.

Table 5-5 shows the modeling results for general satisfaction with CFLs. Only CFL purchasers and those who received a CFL for free in the mail were asked about their general satisfaction with CFLs. Therefore, the model was estimated using only these two types of consumers.

How long CFLs last was the most important factor driving high general satisfaction with CFLs. This suggests early burnout experiences may substantially reduce the likelihood a consumer will be highly satisfied with CFLs. The next most important factor was having CFLs currently installed. It seems reasonable that having CFLs currently installed is a predictor of high general

<sup>13</sup> Note that the prior survey results for this question are based on calling back a sample of respondents to the main purchaser survey and following up on whether the bulbs that were installed at the time of the first survey have been removed. Thus, the comparison is not apples to apples.

satisfaction. Also, having CFLs currently installed may mean recent experience with CFLs, which may be causing high general satisfaction. Satisfaction with CFL bulb light color and brightness were also found to be important factors that increase the likelihood of high general satisfaction. Other factors that increase the likelihood of high general satisfaction with CFLs are the following:

- **Being a renter (versus homeowner).** This result was unexpected. It may be because renters are more limited in their ability to control their utility bill through major improvements, they are more likely to be satisfied than homeowners with the bill savings associated with CFLs.
- **Satisfaction with dimmer, three-way applicability, and CFL bulb appearance.**
- **Living in a high-publicity area.** Energy-efficiency campaigns often focus on how to select the right CFL application and wattage.
- **Purchased CFLs without incentive.** This result is interesting because it suggests that a lower price in and of itself does not increase the likelihood of high general satisfaction. Rather, it may be the case that consumers who are willing to pay full price for CFLs may be more convinced of the benefits of CFLs than a consumer who is not necessarily willing to pay full price.
- **Unaware of waste disposal issues.** (CFLs contain trace amounts of mercury).

Potential factors not found to affect the level of general satisfaction with CFLs include:

- **Demographics other than own/rent.** In contrast, a college education does affect CFL awareness and purchases in the past. Shopping frequently at stores that tend to carry CFLs also affects CFL awareness.
- **Repeat purchases.** One-purchase incidence (repeat purchaser = 0) could reflect the purchase of a single CFL or a 10-pack. Hence, this variable may not reflect the quantity of CFLs purchased, which might more directly be associated with satisfaction. On the other hand, a repeat purchase would still seem to suggest a certain level of satisfaction with an initial purchase. Therefore, it is interesting that a single purchase produces the same level of general satisfaction as repeated purchases.

**Satisfaction with CFL start-up time and fit in fixtures.** This result may reflect the fact that most CFLs in the market today do not have start-up time issues and are produced to fit in most any fixture.<sup>14</sup> Both of these attributes ranked the highest among all attributes by purchasers based on the current survey results.

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<sup>14</sup> The survey results indicated that half of all CFL purchasers made their first purchase within the last 2 years and 87 percent within the last 5 years. This suggests most CFLs being used today were recently manufactured.



**Table 5-5**  
**Consumer Satisfaction With CFLs Modeling Results**

Potential Drivers	P-value	Direction		Rank Order
		Expected	Estimated	
Geo-demographic characteristic				
Single family home	0.2323	↑		
Homeowner***	0.0072	↑	↓	4
College graduate	0.8332	?		
High income	0.5115	↑		
Frequent shopper	0.8406	↑		
Household size 3 or more	0.7273	↓		
Age (18-34, 35-54)	0.8240 0.3207	↓		
Gender	0.7260	?		
CFL purchaser behavior				
Purchaser v. mail-only	0.5221	?		
Repeat purchaser	0.9220	↑		
Recent 1st time purchaser	0.8308	?		
Has purchased CFLs recently	0.1546	↑		
Location of purchase (home store, disc store, buy store, hw/groc only)	0.6510 0.5337 0.4918 0.8508	↑		
Currently installed***	<0.0001	↑	↑	2
Has removed CFLs	0.1726	?		
Used a coupon on recent purchase**	0.0154	?	↓	6
EE programs and messages				
Received a coupon	0.1970	↑		
Received a mail CFL	0.1539	↑		
Live in high publicity area**	0.0195	↑	↑	6
Aware of ENERGY STAR label	0.9922	↑		
Satisfied with CFL attributes				
Color of light provided***	<0.0001	↑	↑	3
Brightness of light provided***	<0.0001	↑	↑	3
Time to light up	0.3401	↑		
Work w/dimmer & 3-way switches**	0.0168	↑	↑	5
Way they fit	0.2304	↑		
Way they look***	0.0013	↑	↑	5
How long they last***	<0.0001	↑	↑	1
Aware of waste disposal issues*	0.0731	↓	↓	6

\*\*\* Coefficient significantly different from 0 at the 1-percent level.

\*\* Coefficient significantly different from 0 at the 5-percent level.

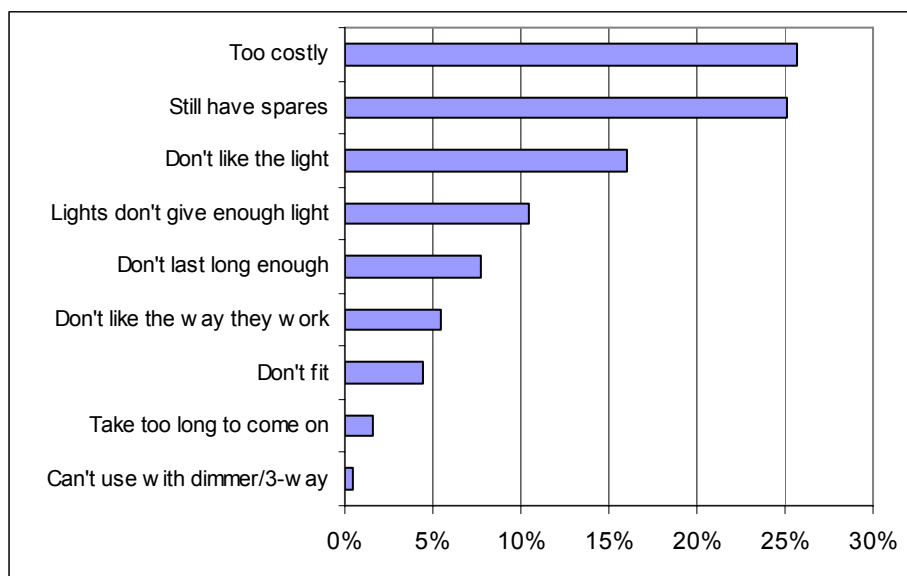
\* Coefficient significantly different from 0 at the 10-percent level.

### 5.1.4 Future CFL Purchase Intentions

Just over half of CFL purchasers are likely to purchase CFLs in the coming year. On a scale from 1 to 5 with 1 meaning not at all likely and 5 meaning very likely, the mean rating was 3.4. Fifty-one percent gave a 4 or a 5 rating, while 31 percent gave a 1 or 2 rating. The most important reasons for purchasers being unlikely to purchase CFLs in the coming year were the higher cost of CFLs as compared to incandescent bulbs and the high incidence of spare CFLs, both at 25 percent of unlikely purchasers (Figure 5-10). Other reasons include dissatisfaction with the light quality, brightness, and early burn-outs.

Table 5-6 shows the modeling results for future CFL purchase intentions. As was the case with general satisfaction, only CFL purchasers and those who received a CFL for free in the mail were asked about their future purchase intentions. Therefore, the model was estimated using only these two types of consumers. Having already purchased a CFL versus only receiving a CFL for free in the mail was the most important factor driving a high likelihood of future purchases. This result is not surprising because CFL purchasers have already demonstrated a willingness to buy CFLs compared with those who have only received a CFL for free in the mail.

**Figure 5-10**  
**Reasons for Being Unlikely to Buy CFLs Next Year**



n=183

In addition, general satisfaction with CFLs is a key factor driving a high likelihood of future purchase intentions. Having recently purchased a CFL was also found to be a determinant. More recent purchasers may be more likely to purchase CFLs in the future due to their favorable experience with the recent improvements in CFL quality and lower prices. Satisfaction with CFL brightness was also found to drive a high likelihood of future purchase intentions, as well as

increase the likelihood of high general satisfaction. Survey results showed dissatisfaction with brightness was the major reason for CFL removals.

Other factors that drive a high likelihood of future CFL purchase intentions are the following:

- **Renting.** As mentioned earlier, this result may be because renters are more likely to be satisfied with utility bill savings associated with CFLs due to their limited ability to invest in more intensive energy-efficiency projects.
- **Early adopters (first CFL purchase prior to 2002).** These consumers have had more experience with CFLs and may be more comfortable with the technology. Also, they may be more likely to believe in the benefits of CFLs because they made their first purchase when a CFL cost \$10 or more.
- **Frequent shoppers at stores that tend to carry CFLs.** These consumers are more likely to have the opportunity to come into contact with CFLs.

Potential factors that do not affect future CFL purchase intentions include:

- **CFL incentives and mail CFLs.** Recall, however, that incentives were found to encourage past purchases. Mail CFLs were not found to encourage purchases in the past either.
- **Repeat purchasing.** As noted earlier, this variable does not reflect one-time bulk purchases that may impact future purchase intentions. It is interesting that a single purchase has the same effect on the likelihood of future CFL purchases as repeated purchases.
- **Live in a high-publicity area.** This does not drive prior CFL purchases either. However, it does drive awareness and the level of general satisfaction.
- **Satisfaction with CFL attributes besides brightness.** On the other hand, satisfaction with several CFL attributes, including brightness, affect the level of general satisfaction.

**Demographics other than own/rent and frequent shopper.** The only demographic other than these two that was found to have an effect in any of the models was a college education, which affects CFL awareness and purchases in the past.

**Table 5-6**  
**Likelihood a Consumer Will Purchase a CFL in the Coming Year Modeling Results**

Potential Drivers	P-value	Direction		Rank Order
		Expected	Estimated	
Geo-demographic characteristic				
Single family home	0.2617	↑		
Homeowner**	0.0149	↑	↓	4
College graduate	0.5883	?		
High income	0.2259	↑		
Frequent shopper*	0.0582	↑	↑	6
Household size 3 or more	0.1143	↓		
Age (18-34, 35-54)	0.4299 0.3469	↓		
Gender	0.3191	?		
CFL purchaser behavior				
Purchaser v. mail-only***	0.0002	↑	↑	1
Repeat purchaser	0.6429	↑		
Recent 1st time purchaser**	0.0119	↓	↓	6
Has purchased CFLs recently***	<0.0001	↑	↑	3
Location of purchase (home store, disc store, buy store, hw/groc only)	0.6921 0.8490 0.1518 0.6479	↑		
Currently installed	0.3964	↑		
Storing	0.3905	↓		
Has removed CFLs	0.1459	↓		
Used a coupon on recent purchase	0.7401	↓		
EE programs and messages				
Received a coupon	0.8863	↑		
Received a mail CFL	0.1006	↑		
Live in high publicity area	0.9165	↑		
Aware of ENERGY STAR label	0.7271	↑		
Satisfied with w/ CFLs (satisfied, more than satisfied, highly satisfied)***	0.0002 <0.0001 <0.0001	↑	↑	2
Satisfied with CFL attributes				
Color of light provided	0.9358	↑		
Brightness of light provided***	0.0034	↑	↑	5
Time to light up	0.2397	↑		
Work w/dimmer & 3-way switches	0.8347	↑		
Way they fit	0.5077	↑		
Way they look	0.2828	↑		
How long they last	0.1145	↑		
Aware of waste disposal issues	0.9418	↓		

\*\*\* Coefficient significantly different from 0 at the 1-percent level.

\*\* Coefficient significantly different from 0 at the 5-percent level.

\* Coefficient significantly different from 0 at the 10-percent level.

### 5.1.5 Influence of ENERGY STAR Label

Seventy-one percent of CFL purchasers are aware of the ENERGY STAR label. Of those who have heard or seen the label, 46 percent noticed the label on the CFLs they purchased recently. Table 5-7 shows the reported influence that the ENERGY STAR label had on purchasers who noticed it. One-third found it to be very influential, while one-quarter not at all influential.

**Table 5-7**  
**Influence of ENERGY STAR Label on Purchase**

Influence	Percentage of Respondents
1=Not at all influential	24%
2	11%
3	13%
4	15%
5=Very influential	34%
Don't know	3%
Mean	3.3
n	195

## 5.2 LIGHTING INVENTORY RESULTS

This subsection presents the following results from the lighting retailer shelf survey. Note that, as mentioned in Section 3, these data represent retailers' stocking patterns and may not be representative of what is purchased.

- **CFL product availability:** the total and share of space dedicated to energy-efficient lighting products among stores that sell CFLs
- **CFL product diversity:** the array of styles and wattages stocked, the number of models and brands for each style and wattage combination, and the share of bulbs that are ENERGY STAR labeled
- **CFL affordability:** the average price of CFLs by style and wattage category before and after rebates.

### 5.2.1 Availability

The lighting shelf inventory investigated the availability of lighting products by collecting information on the total linear feet and number of shelves for light bulbs in the following categories:

1. All light bulbs, including CFLs, incandescents, halogens, fluorescents, et al.

2. CFLs, regardless of whether or not these CFLs qualify for the ENERGY STAR Program (a subset of the first data point)
3. ENERGY STAR CFLs (a subset of the second data point).

Also, data on total square footage of store space were collected for fixtures in general and for ENERGY STAR fixtures. Data for both bulbs and fixtures were collected from all departments in a total of 73 stores representing 8 different store types and the 4 states in the Northwest.

### ***Light Bulbs***

**Total Shelf Space Allocation for All Bulb Types.** Table 5-8 shows the total linear footage and percentage of total linear footage allocated to bulbs in each of the three categories of bulbs (all, CFLs only, ENERGY STAR CFLs only) over all stores and by each of the eight store types represented by the sample. A total of 57,000 linear feet of shelf space is allocated to light bulbs among stores in the region that sell CFLs. Of that space, 24 percent, or 13,000 linear feet, is devoted to CFLs and 21 percent, or 12,000 linear feet, to ENERGY STAR CFLs.<sup>15</sup>

National and regional chains and franchises account for most (86 percent) of the bulb shelf space, with independent stores accounting for 10 percent and club membership chain stores the remaining space (4 percent). CFL and ENERGY STAR CFL space is allocated similarly across the store types.

**Table 5-8**  
**Shelf Space Allocation in Linear Feet by Store Type and Bulb Type**

Store Type	All Bulbs		CFL Bulbs		ENERGY STAR CFL Bulbs		N stores
	Total Linear Ft	% Linear Ft	Total Linear Ft	% Linear Ft	Total Linear Ft	% Linear Ft	
Mass Merchandise chain	12,769	22%	3,876	29%	3,639	31%	9
Hardware – small franchise	12,713	22%	1,704	13%	1,403	12%	13
Hardware <sup>1</sup> – small regional chain	10,537	19%	3,082	23%	2,698	23%	7
Hardware <sup>2</sup> – large chain	6,687	12%	926	7%	822	7%	10
Drug/Grocery chain	6,245	11%	1,678	13%	1,348	12%	19
Independent – specialty <sup>3</sup>	4,767	8%	811	6%	590	5%	9
Club membership chain	2,024	4%	924	7%	924	8%	3
Independent – variety <sup>4</sup>	1,012	2%	345	3%	230	2%	3
Total / Overall	56,753	100%	13,346	100%	11,654	100%	73
Total Share of space		100%		24%		21%	

<sup>1</sup>Includes home improvement stores

<sup>2</sup>Includes home improvement stores – and represents national and large regional chains

<sup>15</sup> Note that these results have been weighted up to the population of stores that carry CFLs in the region. Refer to Section 3.1.2 for a discussion about the shelf survey sample design and the source of the sample frame.

<sup>3</sup>Lighting or home improvement/hardware store

<sup>4</sup>Mass merchandise, drug/grocery or chain club membership store

**Average Shelf Space Allocation for All Bulb Types.** Table 5-9 shows the average amount of shelf space (in linear feet) allocated to bulbs per store. On average, stores allocate 37 linear feet to light bulb displays, with 9 feet to CFLs and 8 specifically to ENERGY STAR CFLs. Large chain hardware stores allocate the most shelf space to light bulbs (nearly 97 linear feet) on a per-store basis, nearly twice the space allocated by stores with the second largest space allocation for bulbs (mass merchandise stores). Large chain hardware stores also allocate the most shelf space both to CFL bulbs specifically and to ENERGY STAR CFLs.

**Table 5-9**  
**Mean Shelf Space Allocation for Light Bulbs in Linear Feet by Store Type and Bulb Type**

Store Type	Mean Linear Ft			N stores
	All Bulbs	CFL Bulbs	ENERGY STAR CFL Bulbs	
Hardware - large chain	96.7	28.3	24.8	10
Club membership chain	46.0	21.0	21.0	3
Mass Merchandise chain	53.6	16.3	15.3	9
Hardware - small franchise	40.6	5.4	4.5	13
Hardware - small regional chain	35.4	4.9	4.4	7
Drug/Grocery chain	18.8	5.0	4.0	19
Independent - variety	14.7	5.0	3.3	3
Independent - specialty	21.6	3.7	2.7	9
Total / Overall	37.4	8.8	7.7	73

**Share of Space for CFL Bulbs.** Of the total shelf space allocated to bulbs across all store types, approximately 24 percent of the total linear footage is allocated to CFL bulbs and 21 percent to ENERGY STAR CFLs (Figure 5-11). Among the different store types, CFLs accounted for between 13 and 46 percent of all shelf space allocated to light bulbs, with most of that share devoted to ENERGY STAR CFLs.

Club membership chain stores are associated with the highest share of bulb space accounted for by CFLs, all of which are ENERGY STAR CFLs. National hardware chains and franchises have the lowest share of CFL bulb space. Independent variety stores are the only stores that have a significant share of space dedicated to non-ENERGY STAR CFLs. However, these stores account for a very small portion (2 percent) of the shelf space region wide so these displays are insignificant.

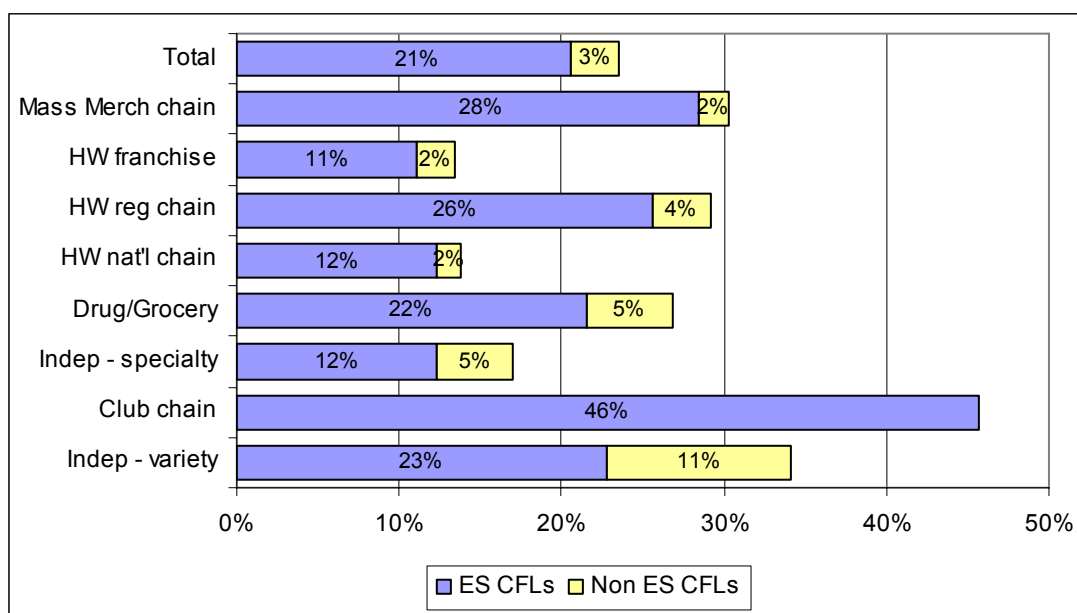
**Geographic Differences.** Although the sample of stores by state was fairly small, an analysis of CFL availability by region showed statistically significant differences in availability by state. Oregon stores had the greatest diversity of bulbs, followed by Washington, Montana and then Idaho (see Tables A-5 and A-6 in Appendix A for detail).

### ***Light Fixtures***

**Average Floor Space Allocation for All Fixture Types.** A total of about 800,000 square feet of display space is allocated to lighting fixtures across Northwest stores that sell CFLs.<sup>16</sup> On average, stores dedicate 500 square feet of space to fixture displays. On a per-store basis, large chain hardware stores allocate the largest area of floor space to light fixtures, more than three times the allocation of the second-highest ranking store type (mass merchandise chains). At the aggregate level, these two store types have about the same amount of fixture displays because there are so many more mass merchandiser stores in the region. Independent variety stores devote the smallest amount of floor space on average and in aggregate to light fixtures.

On average, 1.5 ENERGY STAR fixture models are displayed in stores, with mounted fixtures comprising most of these models. National hardware chains carry the broadest selection of ENERGY STAR fixtures, with more than 10 mounted fixture models versus the average of 1.4.

**Figure 5-11**  
**Percent of Total Shelf Space (Linear Feet) Occupied by CFLs and ENERGY STAR CFLs by Store Type**



n per store type- see Table 5-8

<sup>16</sup> Note that these results have been weighted up to the population of stores that carry CFLs in the region. Refer to Section 3.1.2 for a discussion about the shelf survey sample design and the source of the sample frame.



Table 5-11 shows the average number of ENERGY STAR fixture models stocked by stores that carry the fixtures. For example, 25 percent of the stores carry ENERGY STAR mounted fixtures, and the average number stocked for those stores is 5.6. These results show that even among stores that carry ENERGY STAR fixtures, there is not much diversity in table lamp and torchiere displays.

**Table 5-10**  
**Fixture Display Size and Number of ENERGY STAR Fixture Models by Store Type**

Store Type	Mean Display Area	Total Display Area	Mean Number of ENERGY STAR Models Per Store				N store s
	in SqFt (All Fixtures)		Mounted Fixtures	Table Lamps	Torchieres	All Types	
Hardware - large chain	3,053	332,723	10.71	0.18	0.44	11.33	7
Mass Merchandise chain	927	220,555	-	0.17	-	0.17	9
Hardware - small regional chain	509	96,048	1.26	0.13	-	1.39	10
Independent - specialty	239	52,887	1.89	0.11	-	2.00	9
Hardware - small franchise	161	50,425	0.75	0.16	-	0.92	13
Club membership chain	101	4,431	-	-	-	-	3
Drug/Grocery chain	27	8,958	0.04	-	-	0.04	19
Independent - variety	5	366	-	0.33	-	0.33	3
Total / Overall	506	767,096	1.40	0.12	0	1.50	73

**Table 5-11**  
**Mean Number of ENERGY STAR Light Fixture Models by Fixture Type and Store Category**

Store Category	Mean Number of ENERGY STAR Models Per Store				N	% Total Stores (N = 73)
	Mounted Fixtures	Table Lamps	Torchieres	All Types		
Stores Carrying ES CFL Mounted Fixtures	5.6	-	-	-	18	25%
Stores Carrying ES CFL Table Lamps	-	1.1	-	-	6	8%
Stores Carrying ES CFL Torchieres	-	-	1.7	-	3	4%
Overall (Stores That Carry Any ES CFL Fixtures)	4.1	0.4	0.1	4.5	22	30%

### 5.2.2 Diversity

The lighting shelf survey collected numerous data on diversity of CFL bulbs stocked. The following information on every unique model of CFL on the shelf was recorded:

- Style (e.g., tube, globe, twister, etc.)
- Brand
- Wattage
- Price
- Rebate amount (if applicable)
- Number of bulbs in pack, if bulbs sold in a multi-pack.

This section contains several tables that provide an overview of product diversity among CFL-selling stores in the Northwest. In certain cases, we produced more detailed tables of results (e.g., style by wattage results), which are included in Appendix A. In each of these cases, we comment on the high-level result in this section and refer the reader to the Appendix.

### **Style**

Twister-style bulbs are the most dominant bulb style, accounting for 45 percent of all models stocked. The remaining styles account for about 10 percent or fewer of models found in lighting retail stores, as shown in Table 5-12. Over 90 percent of stores carry twister CFLs, while less than half the stores carry the remaining styles. Spot and two-tube CFLs are the styles that are least commonly stocked by lighting retailers.

Tables A-1 and A-2 and Figure A-1 in Appendix A present these data by store type. The major differences in store stocking of the various CFL styles are:

- Club membership chain stores only stock two kinds of CFLs: twistors (46 percent of models) and reflectors (54 percent of models)
- No independent variety stores carry reflectors, circlines, or replacement-pin CFLs
- Some if not all of the individual stores within the remaining store type categories stock the whole range of CFL styles, with the exception of two-tube and spot CFLs, which as described above, are not commonly stocked.

Tables A-5 and A-6 present these data by state. Differences in store stocking across the states are as follows:

- CFL models on retailer shelves in Idaho are more likely to be twister models than models found on other states' retailer shelves. (63% of all models in Idaho are twister style versus about 40% for the other states).
- Nearly 100 percent of stores in each state stock twister bulbs.
- In general, Oregon stores are the most likely to stock non-twister bulb styles, with the most popularly stocked non-twister bulb styles (incandescent style and 4-tube) being

stocked by 72 percent of stores, and around half stocking the next four styles (circline, reflector, globe and spot).

- In Washington, about half of stores stock the four most popularly stocked non-twister bulb styles (incandescent style, 4-tube, circline and reflector), while around one-quarter stock the next three styles (replacement pin, spot and globe).
- Montana stores are slightly less likely than Washington stores to stock non-twister bulbs, with 65 percent stocking replacement pin, nearly half stocking 4-tube and incandescent style, and one-quarter or less stocking the remaining styles. No circline bulbs were found in any Montana stores.
- Idaho stores are the least likely to stock non-twister bulb styles. Around one-quarter of stores stock incandescent style, reflector, 4-tube, and 2-tube. No circline or spot light bulbs were found in any Idaho stores.

**Table 5-12**

**Percentage of Models by Style and Percentage of Stores Carrying Each Style**

Bulb Style	Bulb Models		Stores	
	% of Total Models This Style	N Models Observed	% of Stores Carrying This Style	N Stores
Twister	45%	436	91%	67
Incandescent Style	8%	81	49%	33
Reflector	11%	106	42%	32
4-Tube	9%	90	46%	29
Circline	10%	102	34%	22
Replacement Pin	9%	84	31%	22
Globe	4%	37	29%	22
Spot	2%	17	20%	11
2-Tube	2%	18	10%	9
Other	-	3	2%	2
Total / Overall	100%	974	100%	73

### ***Number of Models and Brands by Style***

On average, retailers carry about three models per bulb style, offering one or two brands. As shown in Table 5-13, retailers stock a higher number of models for twister-style bulbs than any other bulb type (6.5 models per store). However, the mean number of brands per store carrying twister bulbs is the same as the number carrying circline, reflector, and four-tube-style bulbs, averaging 1.7 brands per store.

### ***Share of Models that are ENERGY STAR by Style***

As shown in Figure 5-10, most of the CFLs that are stocked by retailers are labeled ENERGY STAR. As shown in Table 5-14, the style of the bulb is a major factor in determining the share of CFLs that are ENERGY STAR qualified. Almost all twister-type bulbs have the label, while very few replacement-pin and circline bulbs are ENERGY STAR.<sup>17</sup>

**Table 5-13**  
**Mean Number of Models and Brands Stocked Per Store by Style**

Bulb Style	Models	Brands	N Models Observed
	Mean # Models per Store Carrying This Style	Mean # Brands per Store Carrying This Style	
Twister	6.5	1.7	436
Circline	4.6	1.7	102
Replacement Pin	3.8	1.5	84
Reflector	3.5	1.7	106
4-Tube	3.5	1.7	90
Incandescent Style	2.1	1.2	81
2-Tube	1.8	1.3	18
Globe	1.8	1.5	37
Other	1.4	1.4	3
Spot	1.5	1.1	17

The proportion of bulbs that qualify for the ENERGY STAR designation does not vary much by store type once the style of the bulb is taken into account.

### ***Wattage***

Table 5-15 shows the distribution of CFL wattage for CFL models carried by retailers in the region. Of all the models carried by stores, there is no dominant wattage category. However, the 13- to 15-Watt category is the most likely to be stocked by stores, with 90 percent carrying at least one model of bulb in that category.

There are few differences in these results by store type, except that chain club stores carry only bulbs in the 13- to 15-Watt and 20- to 24-Watt categories.

<sup>17</sup> These bulb styles pre-dated the ENERGY STAR designation, and as such, the ENERGY STAR criteria do not include pin-based bulbs. There are some circline bulbs, however, that are screw-in and we found many of these that are ENERGY STAR labeled.

**Table 5-14**  
**Proportion of Models with ENERGY STAR Label by Bulb Style**

Bulb Style	% of models with ENERGY STAR Label	N Models Observed
Twister	93%	436
Reflector	89%	106
4-Tube	83%	90
Globe	79%	37
Spot	68%	17
2-Tube	62%	18
Incandescent Style	52%	81
Other	29%	3
Replacement Pin	12%	84
Circline	8%	102
Total / Overall	71%	974

**Table 5-15**  
**Percentage of Models by Wattage Category and Percentage of Stores Carrying Wattage Category**

Size Category	Models		Stores	
	% of Total Models of this size	N Models Observed	% of Stores Carrying this size	N Stores
5 to 12 Watts	19%	180	64%	44
13 to 15 Watts	29%	299	89%	66
16 to 19 Watts	7%	80	39%	33
20 to 24 Watts	24%	221	87%	61
25 Watts or More	21%	194	69%	45
Total / Overall	100%	974		

### ***Number of Models and Brands by Wattage Category***

Among stores that stock bulbs within each size category, about three to four models are stocked per category. Similar to the style result, between one and two brands are carried per model. Thirteen- to 15-Watt bulbs have the highest numbers of models and brands per store than bulbs in any other size category (Table 5-16). Bulbs in the 16- to 19-Watt category are stocked in the smallest number of stores overall, and stores stock fewer models and brands on average than bulbs of other sizes.

### ***Share of Models that are ENERGY STAR by Wattage Category***

As described previously, most of the CFLs that are carried by lighting retailers bear the ENERGY STAR label. Bulb style is the main variable of interest with respect to share of ENERGY STAR bulbs. Wattage of bulb does not matter much, as shown below in Table 5-17. The small variation seen in the table is caused by the correlation between bulb style and wattage.

**Table 5-16**  
**Mean Number of CFL Models and Brands Stocked Per Store by Wattage Category**

Size Category	Among Stores that Carry Bulbs in Each Size Category		N Stores
	Mean Number Models per Store	Mean Number Brands per Store	
5 to 12 Watts	4.1	1.6	44
13 to 15 Watts	4.5	1.9	66
16 to 19 Watts	2.4	1.4	33
20 to 24 Watts	3.6	1.7	61
25 Watts or More	4.3	1.8	45

**Table 5-17**  
**Proportion of CFL Models with ENERGY STAR Label by Wattage Category**

Size Category	% of Models with ENERGY STAR Label	N Models Observed
5 to 12 Watts	57%	180
13 to 15 Watts	81%	299
16 to 19 Watts	79%	80
20 to 24 Watts	74%	221
25 Watts or More	61%	194
Total / Overall	71%	974

### ***Style by Wattage***

Table 5-18 shows the percentage of models found on lighting retailers' shelves by bulb style and wattage category. The table shows that the most common bulbs stocked are twister bulbs between 13 and 15 Watts and 20 Watts or greater (39 percent of all models). The next most common bulb found is the circline bulb 25 Watts or more (6 percent of all models). Other findings of interest are:

- Reflector bulbs less than 13 Watts are not carried
- Circline bulbs are only carried with 20 Watts or greater
- Incandescent-style bulbs are only carried with 15 Watts or less

- The remaining bulb styles are carried in the full range of wattages.

**Table 5-18**  
**Percentage of Total CFL Bulb Models by Bulb Style and Size Category**

Bulb Style	Size Category						N Models Observed
	5 to 12 Watts	13 to 15 Watts	16 to 19 Watts	20 to 24 Watts	25 Watts or More	All styles	
Twister	4%	16%	4%	12%	9%	45%	436
2- and 4-Tube	2%	3%	1%	3%	3%	11%	108
Reflector	-	4%	2%	3%	1%	11%	106
Circline	-	-	-	4%	6%	10%	102
Replacement Pin	3%	3%	1%	-	1%	9%	84
Incandescent Style	5%	3%	-	-	-	8%	81
Other	4%	1%	-	-	-	6%	57
All sizes	18%	31%	8%	23%	20%	100%	974

Table 5-19 shows the percentage of stores that stock each of the categories of style and wattage. These results correspond to Table 5-18, with more stores stocking the most popular types of bulbs and few stores stocking the least common types. For example, 37 percent of all bulb models are twister bulbs between 13 and 15 Watts and 20 Watts or greater. Upwards of 80 percent of stores carry these categories of bulbs. Likewise, only 6 percent of all bulb models are replacement-pin bulbs less than 16 Watts, with only one-quarter of stores carrying these models. These results show that the range of bulb models is allocated fairly evenly in stores, so that no one bulb type is concentrated only in a few stores, and popular bulb types are found in many stores.

The results in Table 5-19 also show that for each bulb style, a variety of bulb wattages are available. The few exceptions are:

- **circline bulbs:** lower wattages are not available, but are not applicable to circline bulb installations (e.g., higher wattage torchieres)
- **replacement pin bulbs:** this type of bulb is understocked across the board, and Table 5-19 illustrates that this phenomenon is particularly apparent for the higher wattage bulbs

### ***Number of Models and Brands by Style and Wattage***

For the most part, for every CFL style and wattage combination, stores tend to stock only one brand and one or two models of that brand. In Appendix A, Tables A-3 and A-4 show the mean number of brands and models for each bulb style and wattage combination.

**Table 5-19**  
**Percentage of Stores that Stock CFL Bulbs by Bulb Style and Wattage Category**

Bulb Style	Size Category					N Models Observed
	5 to 12 Watts	13 to 15 Watts	16 to 19 Watts	20 to 24 Watts	25 Watts or More	
Twister	38%	88%	27%	83%	67%	436
2- and 4-Tube	23%	35%	18%	25%	21%	108
Reflector	4%	32%	12%	26%	16%	106
Circline	-	-	1%	32%	33%	102
Incandescent Style	39%	22%	2%	5%	-	84
Replacement Pin	24%	24%	5%	7%	11%	81
Other	30%	9%	1%	2%	-	57

***Share of Models that are ENERGY STAR by Style and Wattage***

Table 5-20 shows the percentage of models for each style/wattage combination that bear the ENERGY STAR logo. For the most part, as mentioned above, bulb style is the main indicator of whether CFLs are labeled ENERGY STAR. The exceptions are for replacement-pin and incandescent-style bulbs. Half the 20- to 24-Watt replacement-pin bulbs are ENERGY STAR, while the other sizes are much less likely to be labeled ENERGY STAR. Likewise, all 20- to 24-Watt incandescent-style bulbs are ENERGY STAR, while a much lower share of the other sizes of this bulb type are ENERGY STAR. Note that in each of these cases, the number of models in the dataset is small.

**Table 5-20**  
**Proportion of CFL Models with ENERGY STAR Label by Bulb Style and Wattage Combination**

Style	Size Category					N Models Observed
	5 to 12 Watts	13 to 15 Watts	16 to 19 Watts	20 to 24 Watts	25 Watts or More	
Twister	99%	94%	91%	93%	92%	436
2- and 4-Tube	94%	70%	82%	88%	76%	108
Reflector	-	95%	97%	91%	81%	106
Circline	-	-	-	8%	9%	102
Replacement Pin	4%	8%	7%	50%	29%	84
Incandescent Style	37%	75%	47%	100%	-	81
Other	69%	100%	-	100%	-	57
Total / Overall	57%	81%	79%	74%	61%	974



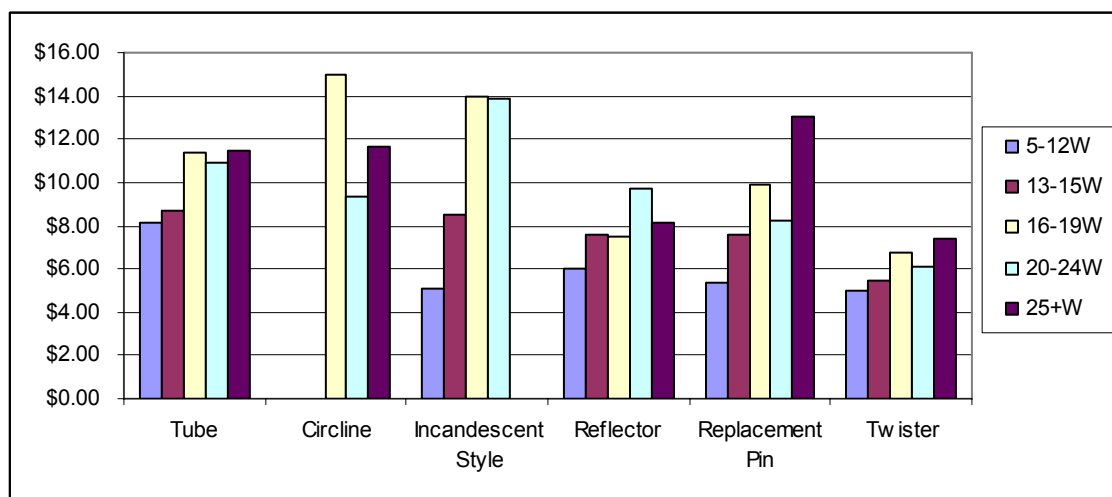
### 5.2.3 Affordability

As part of the shelf survey, the price per bulb (or per pack, for multi-packs) was recorded along with the amount of any available rebate. The average per-bulb price across the entire sample was \$7.74 and after rebates was \$7.59. Twister-style bulbs were the most affordable, at around \$6 each, and circline bulbs were the least affordable, at around \$11 each. In general, the higher the wattage of bulb, the higher the price. The smallest size twister bulbs average about \$5 each.

The Alliance collected CFL price data three times in 1997 and 1998, selecting 6 bulbs that were consistently represented during in-store audits. Average retail price (including incentives) for the selected bulbs was \$14 - \$27 in late 1997<sup>18</sup>, and had dropped to between \$13 and \$16 by late 1998. The current shelf survey results, which include all CFLs for sale among a representative sample of stores selling CFLs, suggest that prices have fallen to just over half levels seen 7 years ago. Since the current survey was conducted in the spring (i.e., not coinciding with the fall promotion), prices may have fallen by more than half when compared to the prior survey results, which were conducted in the fall.

Figure 5-12 shows the after-rebate price for each bulb style and wattage combination from the latest shelf survey. Table 5-21 shows the same information but also includes summary columns of before-rebate pricing at the style and wattage level. As shown, average overall bulb prices differ little before and after rebate by style or size category.

**Figure 5-12**  
**Average CFL Bulb Price (Before Rebate) by Bulb Style and Wattage Category**



n by bulb style see Table 5-20

Table 5-22 shows the affordability results at the bulb style level by store type. Club chain stores offer the lowest prices overall with twister bulbs sold for just over \$2 each and incandescent style

<sup>18</sup> Market Progress Evaluation Report Executive Summary, LightWise, No. 2, Dethman & Associates 1999.

bulbs for just over \$4 (both without rebates). Chain hardware stores have the most expensive product (with twisters sold for \$6-\$8 each), yet carry the widest selection.

**Table 5-21**  
**Average CFL Bulb Price by Bulb Style and Wattage Category**

Style	Size Category					Overall Before Rebate	Overall After Rebate
	5 to 12 Watts	13 to 15 Watts	16 to 19 Watts	20 to 24 Watts	25 Watts or More		
2- and 4-Tube	\$8.18	\$8.65	\$11.41	\$10.93	\$11.48	\$10.10	\$9.91
Circline	-	-	\$15.00	\$9.30	\$11.65	\$10.70	\$10.65
Incandescent Style	\$5.04	\$8.54	\$13.92	\$13.84	-	\$6.90	\$6.73
Other	\$6.54	\$6.48	\$19.94	\$28.69	-	\$7.32	\$7.17
Reflector	\$6.00	\$7.54	\$7.47	\$9.69	\$8.14	\$8.52	\$8.22
Replacement Pin	\$5.35	\$7.58	\$9.91	\$8.23	\$13.07	\$7.75	\$7.74
Twister	\$4.98	\$5.50	\$6.72	\$6.15	\$7.36	\$6.30	\$6.14
Total <b>Before</b> Rebate	\$6.02	\$6.80	\$8.71	\$8.36	\$9.59	\$7.74	na
Total <b>After</b> Rebate	\$5.88	\$6.64	\$8.49	\$8.19	\$9.47	na	\$7.59

n by bulb style see Table 5-20

**Table 5-22**  
**Average Bulb Price by Bulb Style and Store Type**

Store Type	Bulb Style							Overall Before Rebate	Overall After Rebate
	2- and 4-Tube	Circline	Reflector	Other	Incandescent Style	Replacement Pin	Twister		
Club membership chain	-	-	-	-	\$4.28	-	\$2.25	\$3.43	\$3.43
Hardware - small regional chain	\$16.41	\$11.89	\$7.45	\$11.34	\$12.63	\$9.85	\$7.72	\$10.25	\$10.19
Hardware - large chain	\$10.46	\$8.78	\$7.41	\$8.74	\$7.30	\$6.46	\$5.81	\$7.23	\$7.16
Drug/Grocery chain	\$9.67	\$10.91	\$5.99	\$7.16	\$7.85	\$7.54	\$6.82	\$7.58	\$7.46
Hardware - small franchise	\$11.01	\$10.70	\$9.43	\$7.19	\$10.07	\$7.10	\$7.26	\$8.67	\$8.59
Mass Merchandise chain	\$7.62	\$10.25	\$4.37	\$6.52	\$8.14	\$7.57	\$5.02	\$6.90	\$6.58
Independent - specialty	\$7.39	\$10.94	\$5.50	\$3.45	\$6.06	\$10.86	\$4.65	\$6.25	\$6.04
Independent - variety	\$11.79	-	-	\$5.39	\$3.19	-	\$5.26	\$5.81	\$5.81
Total <b>Before</b> Rebate	\$10.10	\$10.70	\$6.90	\$7.32	\$8.52	\$7.75	\$6.30	\$7.74	na
Total <b>After</b> Rebate	\$9.91	\$10.65	\$6.73	\$7.17	\$8.22	\$7.74	\$6.14	na	\$7.59

n by store type see Table 5-8

### 5.3 RETAILER SURVEY RESULTS

This section presents results from the lighting retailer store-manager survey:

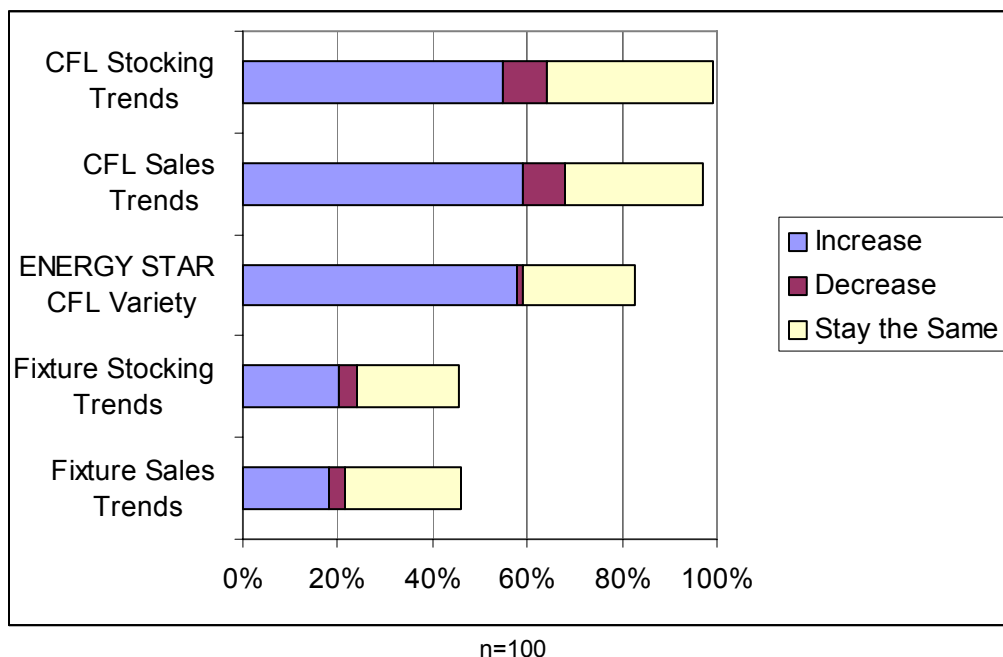
- **Trends in CFL product sales and stocking:** retailers' perceptions of past sales and stocking trends and predictions of future sales and stocking trends
- **Stocking of ENERGY STAR CFLs:** whether stores tend to stock ENERGY STAR versus non-ENERGY STAR CFLs and why
- **Barriers to CFL sales:** the perspective of retailers on drivers and barriers of CFL sales.

#### 5.3.1 Trends in Sales and Stocking

Retailers were asked whether their sales of CFLs and ENERGY STAR fixtures had changed last year compared to 2003. They were also asked whether the total number of CFL models stocked had changed and the variety of ENERGY STAR CFL models.

Figure 5-13 shows these results. (Note that just under half (47 percent) of the retailers stock ENERGY STAR fixtures.) There are very few retailers indicating that they have seen decreases in lighting equipment stocking or sales. For the most part, retailers report increases or status quo levels.

**Figure 5-13**  
**Past Year Lighting Retailer Market Trends**



Comparing CFL stocking trends over time (Figure 5-14), more retailers are indicating that they have increased their stock of CFLs as compared to 2003 survey results. The peak seen in the 2002 study may be the result of mass marketing efforts in the lighting market. In 2003 retailers may have cut back after the big utility programs settled down. Stocking patterns for ENERGY STAR CFLs follows similar trends.

**Figure 5-14**  
**Stocking Trends for CFLs Compared to Previous Evaluation Results**

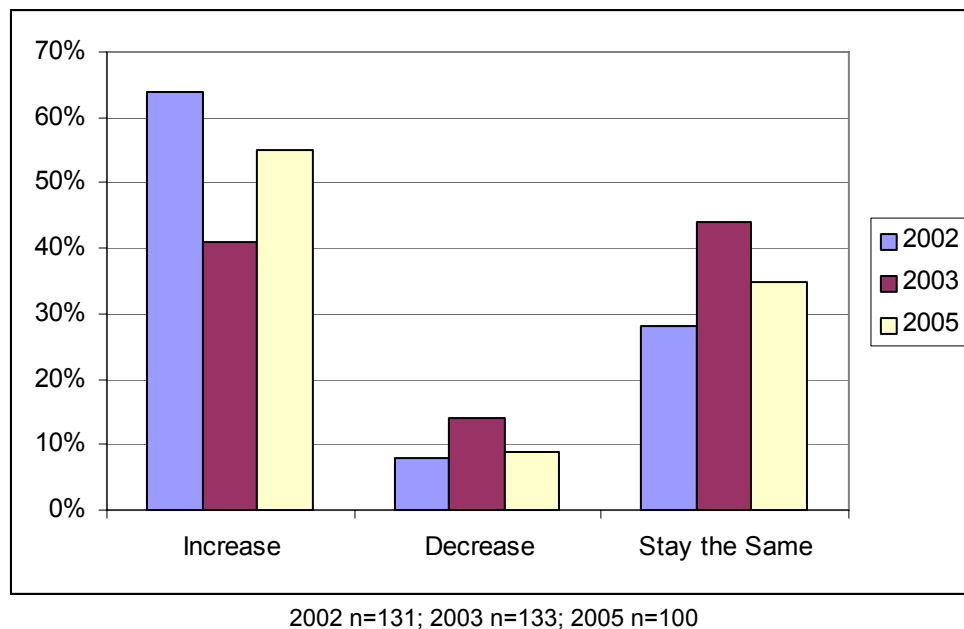
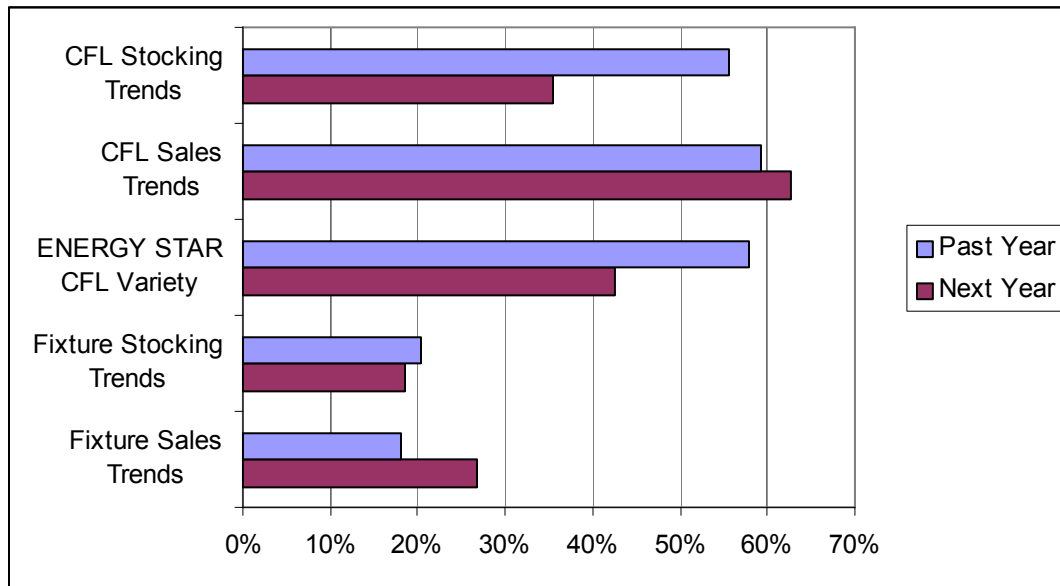


Figure 5-15 compares retailer past-year experience with future projections. Retailers were asked about both their behavior during the past year as well as what they expected would occur in the coming year. While retailers have reported stocking and sales increases in the past year, next-year projections for stocking and variety trends are less than the current levels. This appears to indicate that retailers are starting to get a more stable variety of CFLs. Retailers reported in open-ended responses that they carry a large number of CFLs now and that they are somewhat limited for the future in terms of shelf and/or warehouse space for more varieties.

Sales trends in both the CFL and fixture markets show slightly increased values for next year over current-year values (63 versus 59 percent for CFL sales and 27 versus 18 percent for fixtures). Retailers consider that there are numerous remaining sales opportunities in the lighting market. These results suggest that the rate of increase in CFL sales may continue to increase, at least in the short term.

**Figure 5-15**  
**Increases in Retailer CFL Sales and Stocking**



n=100

Retailers report several factors (in no particular order) contributing to the changes in the CFL bulb market. On the positive side, these include:

- Increases in consumer awareness
- Increasing salesperson knowledge
- Coupon programs
- Increasing utility energy prices
- Decreasing CFL prices
- More CFL selection.

Negative factors include:

- Bulbs that do not last as long as advertised
- Poor lighting quality.

Retailers see the future market continuing to be influenced by these factors. Improved market awareness coupled with improved savings opportunities because of lower bulb costs, higher utility costs, and utility programs will continue to help build future sales.

### ***Fixture Trends***

The fixture market is still substantially smaller than the CFL market. Over half (53 percent) of all retailers state that they do not carry ENERGY STAR fixture models. The reasons for not carrying the equipment include:

- Too much competition in the fixture market
- Reliability issues with past equipment
- Buying decisions are not made at the retail level
- Manufacturers/distributors not able to commit to product or do not recommend products
- Lack of shelf space
- Very little or no demand.

While these are rationales provided by those who do not stock ENERGY STAR fixtures, there are numerous stores that are increasing stocking and sales efforts. In these cases, the increased fixture stocking projections stem from increasing customer demand, increasing product availability, and improvements in technology that are making the fixtures more promising. Retailers expect fixture sales to increase because of improved rebates, reduced product prices, more product availability, and increased customer awareness of the benefits.

### ***Trends by Store Type***

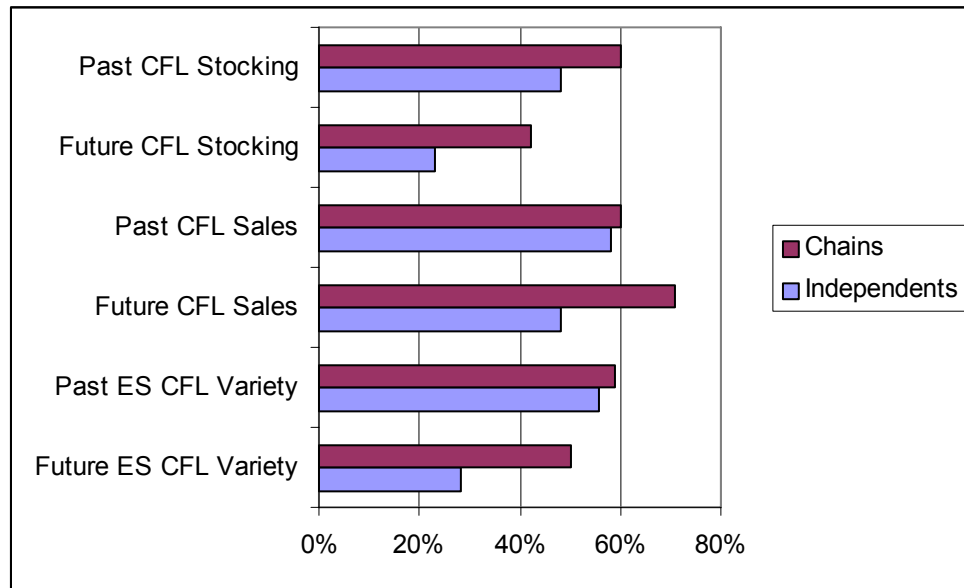
The results on retailer trends in sales and stocking of CFL products differ somewhat by store type and region. Figure 5-16 shows the percentage of retailers reporting increases last year and predicting increases next year for the various stocking and sales trends. Key findings include:

- Both chains and independents are less likely to expect to see continued increases in the variety of CFLs stocked, with independents on the whole less likely to increase variety
- More chain stores are predicting higher sales in 2005 than 2004, with the reverse true for independents—and since sales are likely higher among chain stores for the region,<sup>19</sup> these predictions suggest that the increase in CFL sales may be higher in 2005 than it was for 2004.

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<sup>19</sup> Shelf survey results show that chain stores account for over 90 percent of the shelf space devoted to CFLs for the region.

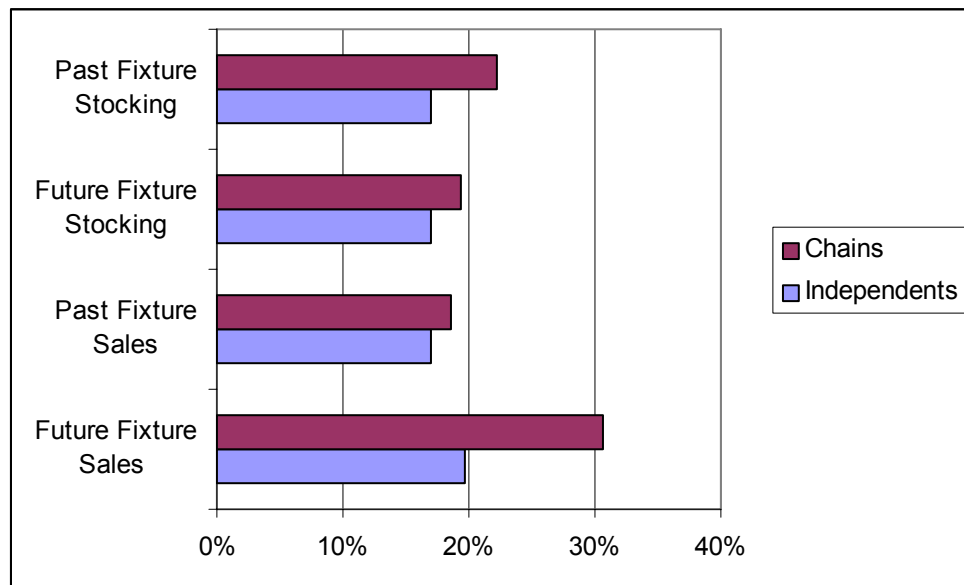
**Figure 5-16**  
**Increases in Retailer CFL Sales and Stocking by Store Type**



n=100, 68 chains and 32 independents

Figure 5-17 shows ENERGY STAR fixture sales and stocking trends by store type. The difference between chains and independents are less pronounced with regard to fixture trends, with the exception of future fixture sales. Chains are much more bullish about the future for ENERGY STAR fixture sales increases.

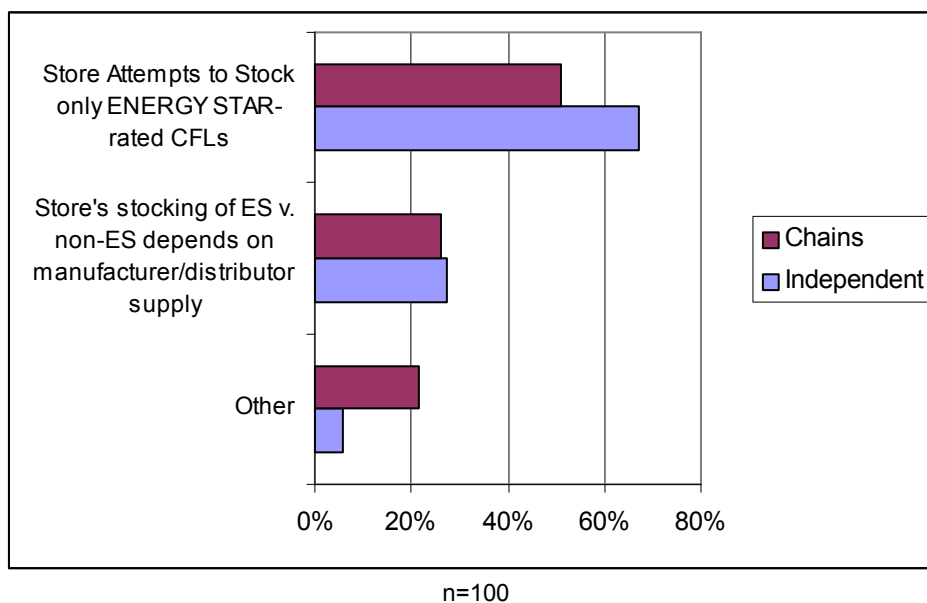
**Figure 5-17**  
**Increases in Retailer Fixture Sales and Stocking by Store Type**



### 5.3.2 Stocking of ENERGY STAR CFLs

When asked about their store's ENERGY STAR CFL stocking decision-making, over half (57 percent) of all retailers reported that their store attempts to stock only ENERGY STAR CFLs. Another 27 percent state that their store's stock of ENERGY STAR versus non-ENERGY STAR CFLs depends mostly on what the manufacturer or distributor provides to the store. Figure 5-20 presents the results by store type. Independent stores tended to offer both of these responses at higher rates than chain stores. Chains had a high number of "Other" responses (21 percent) including numerous stores that have a mix of ENERGY STAR and non ENERGY STAR and have stocking decisions coming from a corporate office. These larger stores want to offer a wider range of products so do not restrict themselves to ENERGY STAR products and are less locally able to make stocking decisions because of their chain status.

**Figure 5-18**  
**CFL Stocking Practices by Store Type**



### 5.3.3 Barriers and Drivers

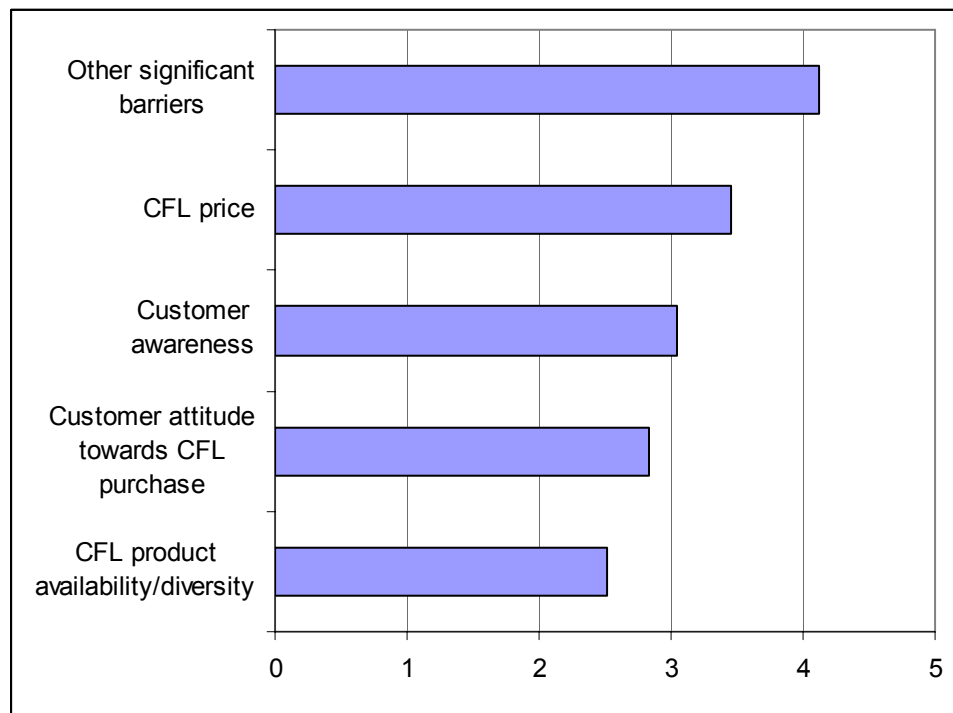
Retailers were asked to rate the following barriers with regard to how significant they thought they are in affecting increased CFL sales:

- CFL price
- Customer awareness of CFLs
- Customer attitudes towards CFLs
- CFL product availability and diversity.



Figure 5-21 presents the mean of the rating results for each potential barrier. The ratings were given on a scale of 1 to 5, with 1 being not at all a barrier and 5 a significant barrier. As shown, CFL price is the most significant barrier according to retailers, followed by customer awareness and then customer attitude.

**Figure 5-19**  
**Market Barriers to Increasing CFL Bulb Sales**



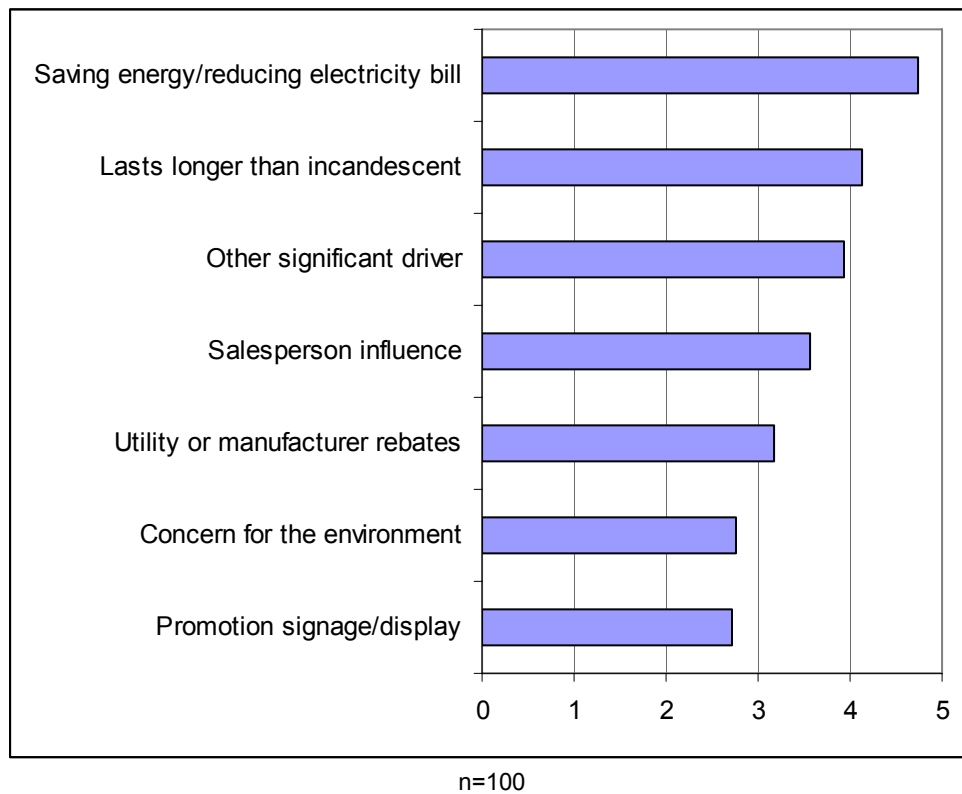
n=100

There were numerous other barriers that retailers felt were important. The “Other Significant Barriers” comments included:

- Limited dimmable-bulb solutions
- Early reliability issues tainted customers
- Disposal concerns
- Technical considerations (size, wattage, color, applicability in cold weather applications).

Retailers were also asked their opinions on what factors drive CFL sales. Again, a scale of 1 to 5 was used with 1 being “not at all a driver” and 5 being a “significant driver.” Figure 5-22 presents the mean score for each potential driver. Saving energy and reducing electricity bill costs were reported as the most important drivers of CFL purchases.

**Figure 5-20**  
**Market Drivers for CFL Bulb Sales**



Other drivers included the wide variety and ever-improving selection of CFLs, the convenience of a bulb that does not need to be changed very often, and improved customer education and awareness.

The barrier and driver results are consistent with consumer results on CFL purchase motivations and reasons that nonpurchasers have not bought CFLs.

This section presents the results on appliances from one consumer survey and two supplier surveys:

- **Consumer ENERGY STAR/Ultra-High-Efficiency (UHE) Clothes Washer Purchaser Survey.** We have selected a few key results from a report that was delivered to the Alliance in November 2004 that described the results from a survey of 100 2004 Double Your Savings promotion participants. During this spring promotion, electric utilities in Oregon, Washington, Idaho, and Montana offered mail-in rebates and facilitated applications for manufacturer rebates for the purchase of ENERGY STAR-qualified clothes washers. The Alliance provided merchandising and marketing support to retailers and utilities. Some utilities offered a higher rebate for the purchase of UHE clothes washers, which have a higher energy and water efficiency rating (modified energy factor >1.8) than ENERGY STAR models.
- **Appliance Retailer Store-Level Manager Survey.** We analyzed results from the 100 appliance retailer surveys by store type and region (i.e., state and east or west of the Cascades) and where we found significant differences, we report them by these categories. We also compared results to the prior retailer survey and show changes over time where such comparisons are possible. Note that about half of the questions in the retailer survey relate to the process evaluation, and as such, these results are presented in Section 7.
- **Clothes Washer Mystery Shopper Survey.** While we analyzed the mystery shopper results by store type and region, there were too few stores in the sample (25) to produce meaningful results by these categories. This type of research method is subjective by nature, and a larger sample size would not have necessarily increased the “precision” of the results since they are meant to provide a characterization of behaviors rather than quantitative measurements.

These survey results measure market progress in meeting the following project goals:

- Support retailer promotion of ENERGY STAR products
- Strengthen the influence of the ENERGY STAR brand
- Enlist retail channels in promotion of UHE clothes washers.

Below, we first discuss retailers’ perceptions of the importance of the ENERGY STAR label to their sales based on the retailer store manager survey. Then, we discuss the mystery shopper survey results, which provide a perspective of how salespeople actually use the ENERGY STAR label and energy efficiency in their sales pitch to consumers. Finally, we present results from the consumer survey on the importance of the ENERGY STAR label on their actual purchase decision.

## 6.1 RETAILER OPINIONS REGARDING THE ENERGY STAR BRAND

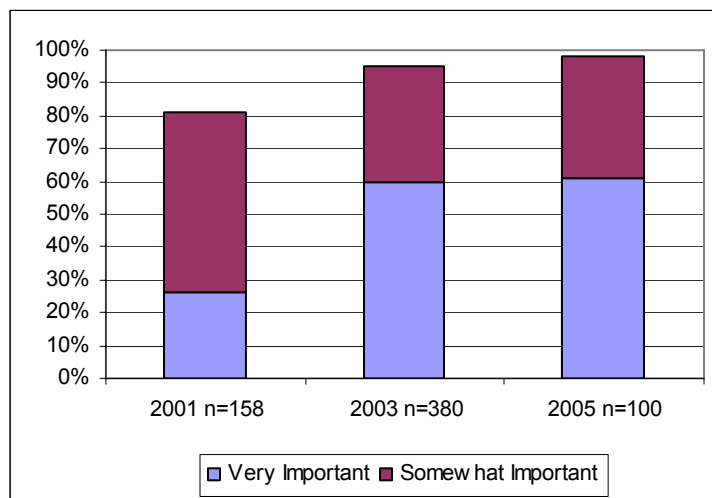
As described in Section 2, field services are the heart of the Alliance's project, with field representatives making on the order of 7,000 visits to retailers per year, providing a range of services including training, point-of-purchase materials, and general marketing support. These visits support the Alliance's project goals to strengthen the ENERGY STAR brand and ultimately increase ENERGY STAR product market shares. These retailer results provide the reader with a picture of how retailers use the ENERGY STAR brand to increase sales and how effective and important they believe the brand is to selling energy efficient appliances. While this section does not directly assess the project's influence (versus other influences, for example) on retailer behavior, it does give an indication of current retailer behavior and perceptions and includes the cumulative project effects on their behavior.

First, we present the overall importance of the ENERGY STAR brand to retailers in their appliance marketing and sales efforts. Next, we report retailers' assumptions on the use of the ENERGY STAR brand in their sales peoples' pitches to consumers. Then we discuss retailers' perceptions on how important the brand is to consumers, followed by their opinions of drivers of and barriers to sales of ENERGY STAR appliances.

### 6.1.1 Importance of ENERGY STAR Brand to Retailers

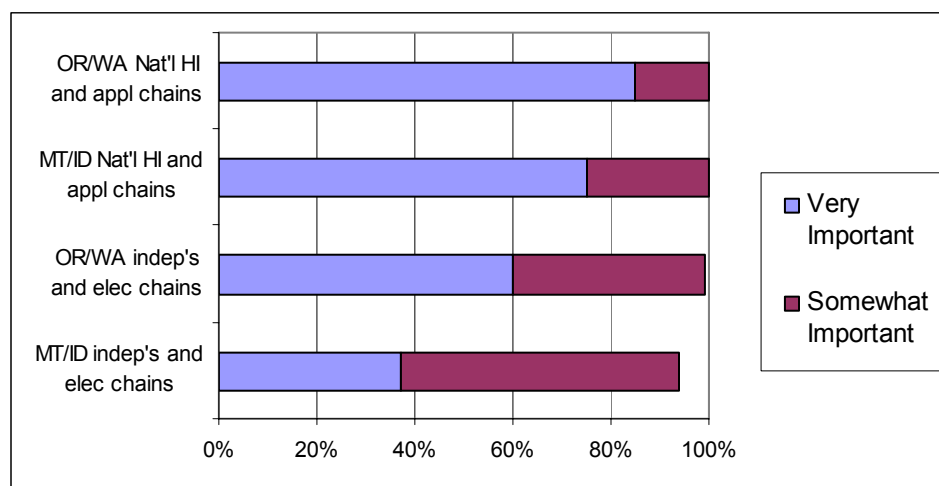
Retailers were asked how important the ENERGY STAR qualification and label is in their appliance marketing and sales efforts. As shown in Figure 6-1, retailers continue to find the ENERGY STAR brand an important part of their marketing efforts. The 2005 appliance retailer responses are similar to 2003 and show continued value of the brand.

**Figure 6-1**  
**Importance of ENERGY STAR Brand to Retailers over Time**



The 2005 survey results differ by store type and region. The national home improvement and large appliance store chains felt the label was more important than independent stores and home electronic chains. Likewise, stores in Oregon and Washington placed higher importance on the brand than stores in Montana and Idaho, even once store type is accounted for. Figure 6-2 illustrates these results. These results may reflect intrinsic characteristics of regions and stores, as well as project design features. The Alliance's project field representatives visit certain stores more frequently than others, specifically the national home improvement and appliance store chains. Likewise, utilities and state and city governments in Oregon and Washington have tended to be more aggressive about energy efficiency than those in Montana and Idaho. There are also cultural differences between the two areas that reflect urban versus suburban or rural areas in general and inland versus coastal areas.

**Figure 6-2**  
**Importance of the ENERGY STAR Brand to Retailers by Store Type**



n = 32, 17, 32 and 19 for the four bars shown above, respectively (throughout section)

MT=Montana, ID=Idaho, OR=Oregon, MT=Montana, ID=Idaho

appl chains=Appliance chain stores, HI=home improvement stores,

indep's=independent stores, elec chains=home electronic chain stores

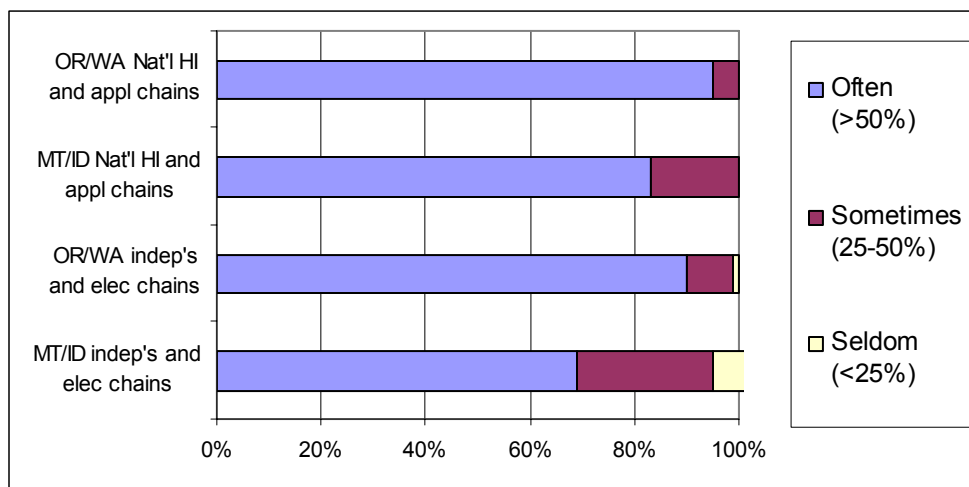
### 6.1.2 Retailer Perception of Salesperson Promotion of ENERGY STAR

The Alliance's project seeks to influence salespeople to promote ENERGY STAR appliances by providing promotional materials, keeping retailers up to date on utility and other promotions, and providing technical assistance in understanding the benefits of ENERGY STAR products.

Retailers were asked how often they thought their salespeople discussed the benefits of ENERGY STAR with potential buyers. The majority of retailers (85 percent) said that their salespeople "often" discuss ENERGY STAR with their customers, with regional and store type influencing the result. As shown in Figure 6-3, the highest frequency of use of ENERGY STAR by salespeople (according to retailers) is in Oregon and Washington stores. Despite the fact that retailers in Montana and Idaho do not place as high of an importance on the ENERGY STAR brand (from Figure 6-2) as retailers in Oregon and Washington, all locations are promoting the program with similar reported frequency. Because the survey asked only if retailers are

discussing the ENERGY STAR brands 50 percent or more of the time, this difference may be under-reported because the actual percentage in the Oregon and Washington areas may be higher on average than in locations where retailers place less value on the brand.

**Figure 6-3**  
**Frequency Retailers Discuss ENERGY STAR Qualifications or Benefits with Customers by Region and Store Type**



### 6.1.3 Retailer Perception of the Importance of ENERGY STAR to Customers

Retailers were asked how important they think the ENERGY STAR brand is to their customers. Almost all retailers think the brand is at least somewhat important, if not very important. When compared to the importance on retailers and salespeople, retailers rate the brand as less important to consumers. Similar to the prior results, store type and region impact the degree of importance retailers place on ENERGY STAR, as shown in Figure 6-4.

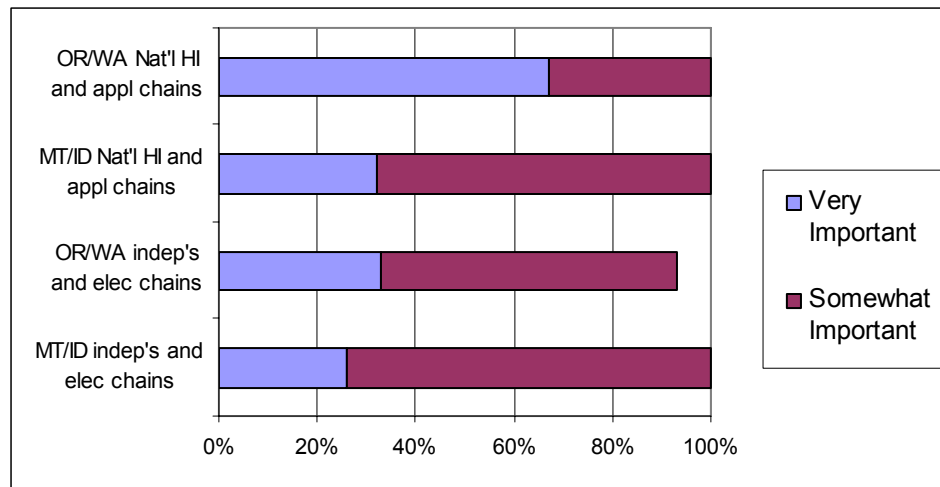
### 6.1.4 Retailer Perception of Drivers and Barriers to Sales of ENERGY STAR Appliances

Retailers were asked their opinions on what drives ENERGY STAR appliance sales and what are barriers to increasing sales.

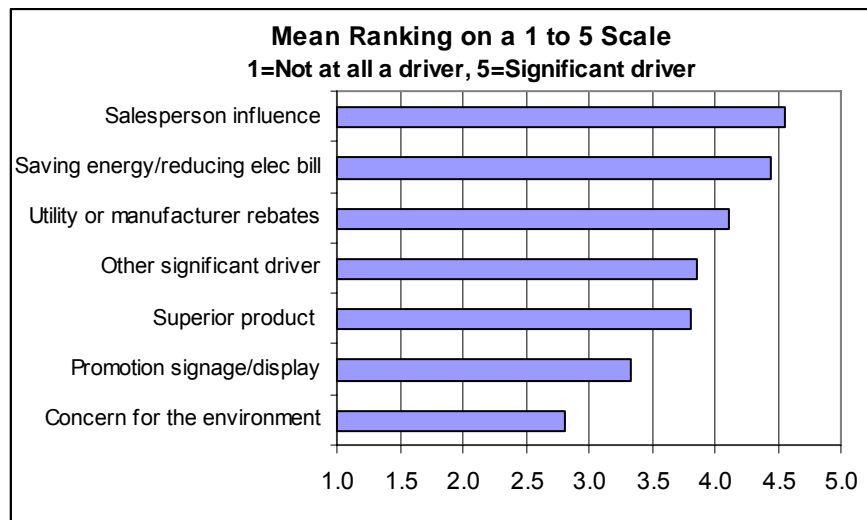
#### Drivers

Retailer store managers were asked to rate a series of potential drivers of ENERGY STAR appliance sales on a scale of 1 to 5, with 1 being not a driver at all and 5 being the most significant driver. Retailers consider that their sales person is the strongest driver, followed by energy savings or utility rebates. The only notable difference by store type and region was that Oregon and Washington stores and independents were more likely to indicate that utility incentives drive sales. The overall results are shown in Figure 6-5.

**Figure 6-4**  
**Retailer Assessment of ENERGY STAR Brand Importance to Customers by Region and Store Type**



**Figure 6-5**  
**Retailer Ranking of Drivers of Sales of ENERGY STAR Appliances (Mean)**



n=100 (throughout section)

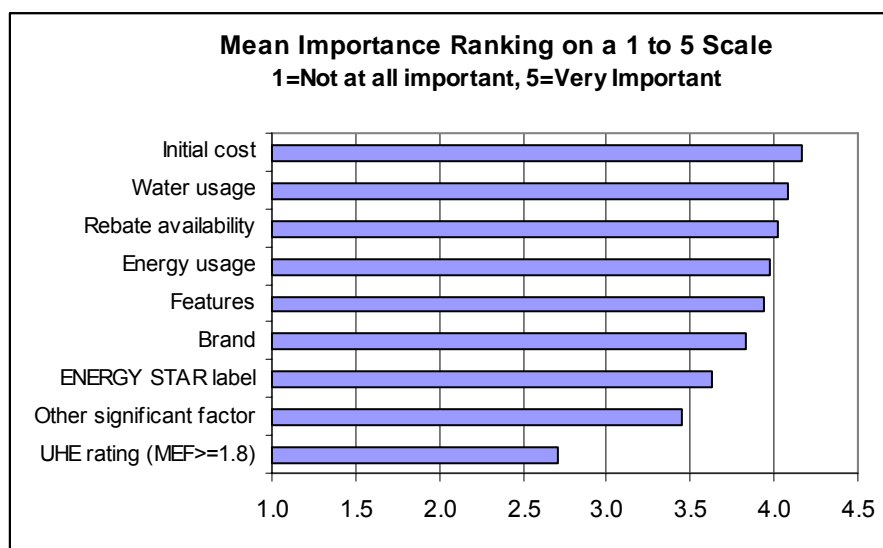
Other significant drivers included:

- Other educational sources such as consumer reports
- Word-of-mouth advice from service technicians, family, or friends
- Brand loyalty
- High proportion of display units are ENERGY STAR units.

Retailers perceive that customer motivation to save energy is primarily driven by the cost savings versus environmental benefits as evidenced by the fact that concern for the environment received the lowest ranking.

Next, retailers rated the importance of various attributes to customers who are purchasing a clothes washer. Again, this was on a scale from 1 to 5, with 5 being very important and 1 being not at all important. Initial cost, rebates and resource savings all factored high on the list. Retailers feel that the ENERGY STAR label is less important than brand, features, and cost and energy/water savings. The UHE rating appears as the lowest ranked item from the retailer's perspective. We did not find any notable differences by store type or region for this result either. Overall results are shown in Figure 6-6.

**Figure 6-6**  
**Customer Importance of Clothes Washer Attributes from Retailer Perspective (Mean)**

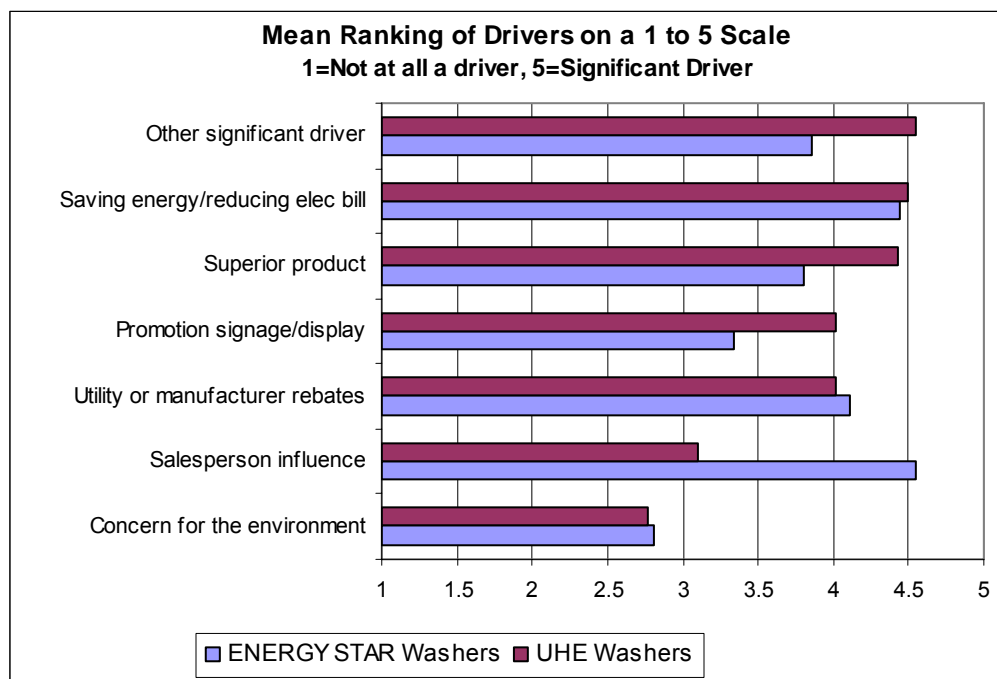


Other significant attributes included product advertising and the availability of warranties.

Retailers rated the factors that drive UHE clothes washer sales. Because these compare directly to the drivers of ENERGY STAR appliance sales, we have included both in Figure 6-7, which shows overall results, with few differences worth noting by store type and region. The biggest differences are that the salesperson influence drops way down in importance for UHE sales. UHE products are reported by retailers to appear to show superior quality since their ranking in this category also increases.



**Figure 6-7**  
**Ranking of Driving Factors Influencing both ENERGY STAR and UHE Purchases (Mean)**



Other UHE specific drivers include:

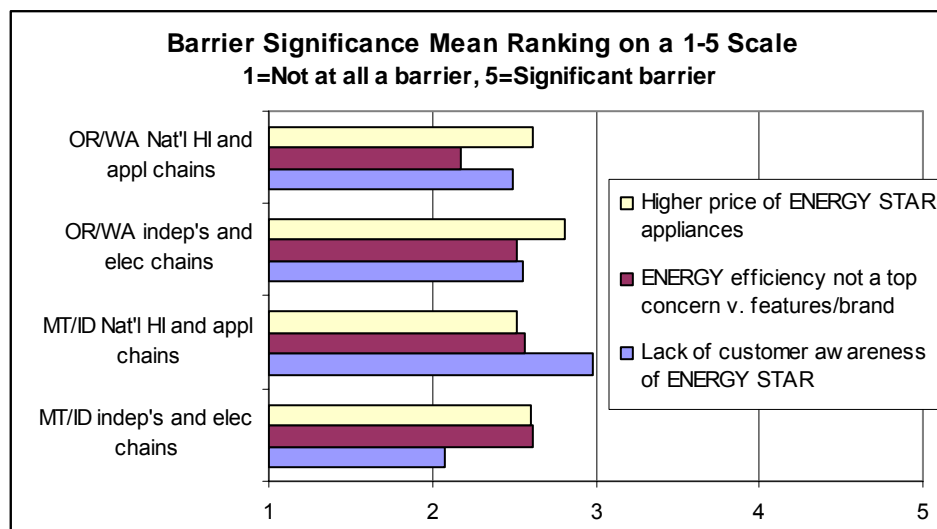
- Advertising
- Size (smallest unit is a UHE version)
- Word of mouth from friends and family.

### **Barriers**

With ENERGY STAR clothes washer market shares currently at 40 percent in the region, up from below 20 percent in 2000, it may not be surprising to find that retailers are not reporting any significant barriers to increasing sales of ENERGY STAR appliances.

Potential barriers to ENERGY STAR clothes washer sales that retailers were asked to rate were (1) lack of customer awareness of ENERGY STAR, (2) energy efficiency not as important as brand and features to customers, and (3) higher price of ENERGY STAR appliances. None of these barriers was rated as a significant barrier by the average retailer. Figure 6-5 shows the mean barrier rating on a scale of 1 to 5, with 1 being not a barrier at all and 5 being the most significant barrier. There are only slight differences across store types and regions, but overall none of the potential barriers are significant according to retailers.

**Figure 6-8**  
**Retailer Ranking of Barriers to Sales of ENERGY STAR Appliances (Mean Response)**



## 6.2 SALESPERSON PROMOTION OF ENERGY STAR AND UHE CLOTHES WASHERS

This section presents the results of the mystery shopper survey, where surveyors posed as clothes washer shoppers and recorded the details of a sales pitch at 25 appliance stores in the Northwest during the spring ENERGY STAR appliance promotion (Spring Into a World of Savings, the successor to the Double Your Savings promotion<sup>20</sup>). The sample selected was intended to reflect the makeup of appliance store types and locations across the region. As stated previously, this research method is subjective and useful for gaining an understanding of the extent to which salespeople use ENERGY STAR and other clothes washer attributes in making sales. While the above results regarding salespeople reflected store managers' assumptions about their sales staff's behavior, these results reflect actual experiences of shoppers.

The nature of how appliances are sold by retailers is through their salespeople. Many salespeople receive commissions for sales, and often these commissions are tied to the price of the units sold. Salespeople typically try to understand the motivations of their customers before developing their sales pitch. These factors influence how and the extent to which salespeople promote ENERGY STAR to potential buyers. For example, consumers who are concerned about energy and water usage will be steered towards high-efficiency units. Our shoppers described themselves as being in the market for a new washer, collecting information on several models without offering any opinions or desires on the type of washer they were seeking. After being shown an initial set of models, the shopper then asked about energy efficiency if it was not

<sup>20</sup> The Spring Into a World of Savings promotion differs from the prior DYS promotions in that manufacturers have more flexibility in the timing and structure of their promotion.

already brought up. Results are presented as unprompted and prompted to indicate whether a unit was described as energy efficient before or after the prompt.

First, we show the share of the units shown to the shoppers that had the ENERGY STAR label and had a modified energy factor greater than 1.8 (UHE washers). Next, we show the frequency that salespeople discussed certain attributes of energy-efficient clothes washers when discussing the units shown, including energy efficiency, water efficiency, and the ENERGY STAR label. Finally, we discuss the knowledgeability of salespeople regarding the benefits of ENERGY STAR and UHE clothes washers, based on prompted and unprompted discussions with the mystery shoppers.

### **6.2.1 Share of Units Shown that are ENERGY STAR and UHE**

At each appliance store visit the shopper allowed the sales person to show him up to five washing machine models. For each unit, notes were taken on the modified energy factor of each model and whether or not it had an ENERGY STAR label. The make and model numbers were recorded for each model, and MEF's were looked up after the surveys were completed.

As summarized in Table 6-1, most units shown had the ENERGY STAR label, while only about one-quarter of the units had a modified energy factor above 1.8 (i.e., were UHE washers). Note that at this point, the shopper had not mentioned or asked about energy efficiency. These results suggest that ENERGY STAR units are routinely shown to shoppers, at least during the spring appliance promotion. With market shares currently below 50 percent in the region, we may find during nonpromotional periods that ENERGY STAR units are shown less often. UHE units, on the other hand, are not routinely promoted to shoppers, even during the promotion period.

Anecdotally, shoppers reported that in many cases salespeople showed them one UHE washer, which often had the highest price, followed by a few ENERGY STAR models and then one base model that was typically not ENERGY STAR. These models were presented in order of highest price/amount of features and most efficient to least price/attributes and lowest efficiency. The salesperson would then describe each, starting with the UHE washer first.

**Table 6-1**  
**Share of Clothes Washers Shown by Salesperson with ENERGY STAR Label and MEF>1.8**

<b>Attribute</b>	<b>Percentage of Units</b>
ENERGY STAR Label	81%
Modified Energy Factor > 1.8	24%
Number of Units in Sample	90

### **6.2.2 How Clothes Washers Are Promoted**

During the sales pitch, the shopper noted whether or not the salesperson mentioned the ENERGY STAR label, energy-efficiency, utility and manufacturer rebates, savings in water use,

required drying time and detergent, and amount of wear and tear on clothing with respect to each of the units. Recall from above that 81 percent of the units shown bore the ENERGY STAR label and, as such, that same percentage could be described as energy efficient, water efficient, etc. After all units were described, if the salesperson had not mentioned energy efficiency yet, the shopper asked whether any of the units shown were energy efficient.

Figure 6-6 shows the rates at which these attributes were used as a promotional tool by the salespeople in the sample. While only 7 percent of units were described as bearing the ENERGY STAR label, 80 percent of units were voluntarily (before the prompt) described as energy efficient and 83 percent as being water efficient. These results suggest that the salesperson relies more on their ability to describe energy efficiency and water efficiency to sell ENERGY STAR clothes washers and less on the ENERGY STAR label. This may not mean that salespeople do not think the label is important to sales—it may be a tool for them to know whether a unit is efficient, in which case they will describe it as so.

Anecdotally, our shoppers mentioned that salespeople often asked up front whether they were interested in front- or top-loading units, describing front-loading units as energy- and water-efficient. This result may indicate that salespeople tend to view clothes washer efficiency in terms of one technology versus another, which might be another explanation for the low incidence that the ENERGY STAR label is used to describe a clothes washer.

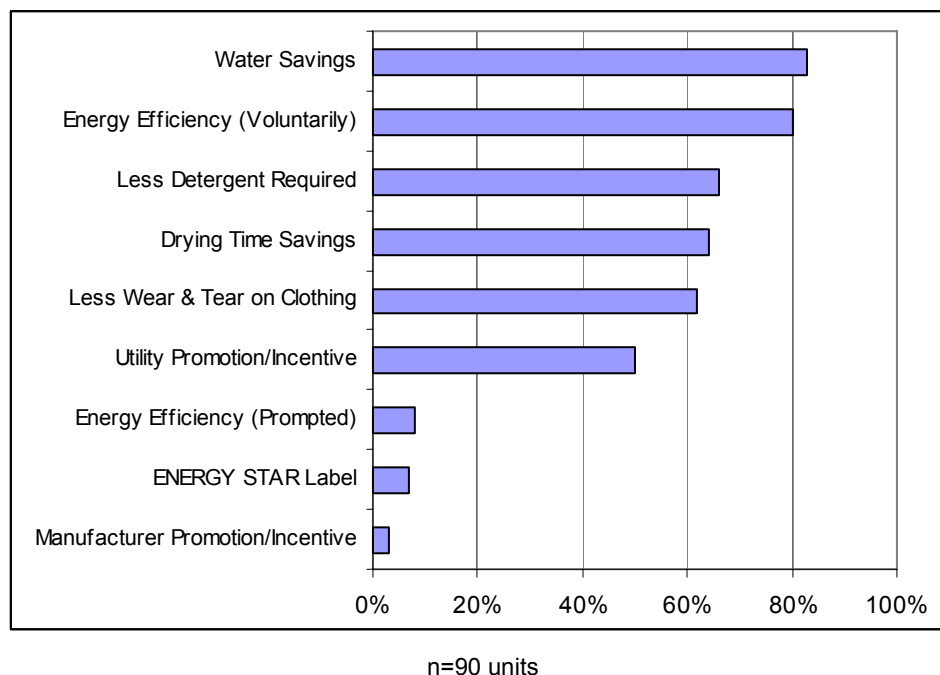
The other attributes of high-efficiency units such as less drying time, detergent, and wear and tear on clothes were mentioned almost as frequently as energy and water savings, suggesting that salespeople believe these attributes are important to selling clothes washers.

Utility incentives were mentioned with regard to half of the units shown. These results differed by region and store type, with independent stores and stores located in Oregon and Washington much more likely to mention the rebates. These results are consistent with the previous retailer store manager findings. The regional result corresponds to the areas with the most active utilities. The store type result may suggest that independent stores are more likely to use utility rebate programs to promote high-efficiency appliances.

### **6.2.3 Salesperson Knowledge Regarding Efficient Clothes Washer Benefits**

In addition to noting the various clothes washer attributes mentioned by the salespeople to promote the models shown to the shopper, the mystery shoppers had a battery of questions and prompts prepared to test the knowledge of the sales person on a few select items during the sales pitch: the ENERGY STAR label's meaning; energy efficiency in general; the modified energy factor use and definition; the Spring Into a World of Savings promotion; water savings; and drying time savings.

**Figure 6-9**  
**Frequency that Attributes of Clothes Washers are Promoted by Sales People**



Salespeople were rated on each aspect by the shopper as being not at all, somewhat, or very knowledgeable. The ratings were assigned according to a prescribed set of definitions for each item. For example, if the salesperson mentioned that ENERGY STAR products use less energy than standard products due to specific design features such as using less water, they were characterized as being very knowledgeable about ENERGY STAR. If they were only able to mention that ENERGY STAR products use less energy than standard products, they were characterized as somewhat knowledgeable. If they were unaware of ENERGY STAR or confused it with the ENERGY GUIDE label, they were characterized as not at all knowledgeable. These definitions are presented for each attribute in Appendix B.

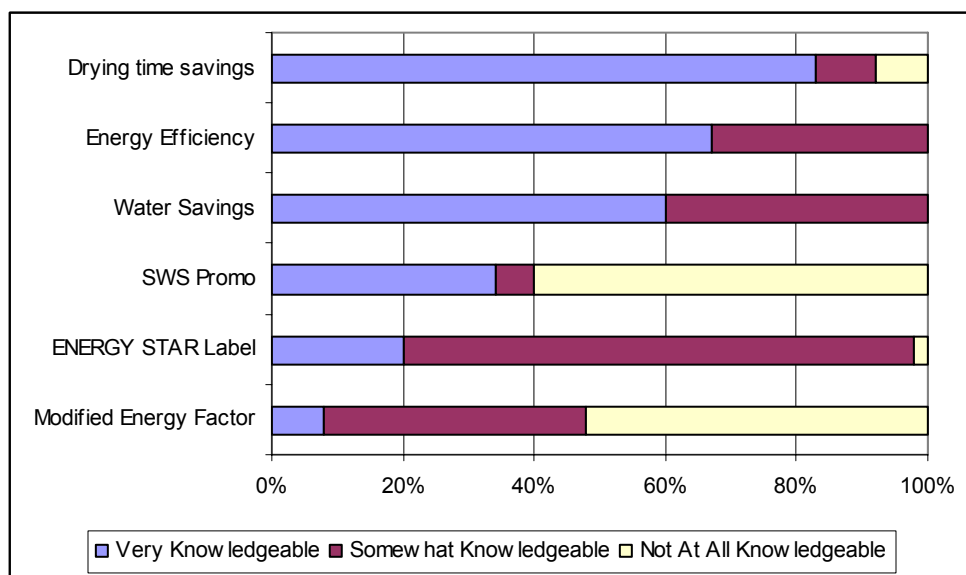
- a. **Very knowledgeable:** mentions that ENERGY STAR products use less energy than standard products due to superior design and system features. Either mentions the modified energy factor or that ENERGY STAR clothes washers use a lot less water to clean clothes and extract more water from clothes during the spin cycle leading to significant dryer savings.
- b. **Somewhat knowledgeable:** mentions that ENERGY STAR products use less energy than standard products.
- c. **Not at all knowledgeable:** unsure what ENERGY STAR means, confuses it with the ENERGY GUIDE, which describes how much electricity and gas the model uses annually.

Figure 6-10 summarizes the results of salesperson knowledge. As shown, salespeople in general are knowledgeable about drying time savings, energy efficiency, and water savings. Knowledge

about the ENERGY STAR label and the modified energy factor was very low across the board. This corroborates, and may explain, the previous finding that salespeople tend to focus on the energy, water and dryer water savings attributes of high-efficiency clothes washers, rather than the ENERGY STAR label.

Awareness of the Spring Into a World of Savings was fairly low. This result is strongly tied to region and store type. Salespeople in Montana and Idaho stores are not promoting the rebate at all. Western Washington (Puget Sound Energy utility service area) stores (independents and chains) were strongly promoting rebates. In eastern Washington and Oregon, independent stores were more likely to be pushing rebates than chain stores.

**Figure 6-10**  
**Salesperson Knowledge on Aspects of Energy-Efficient Clothes Washers**



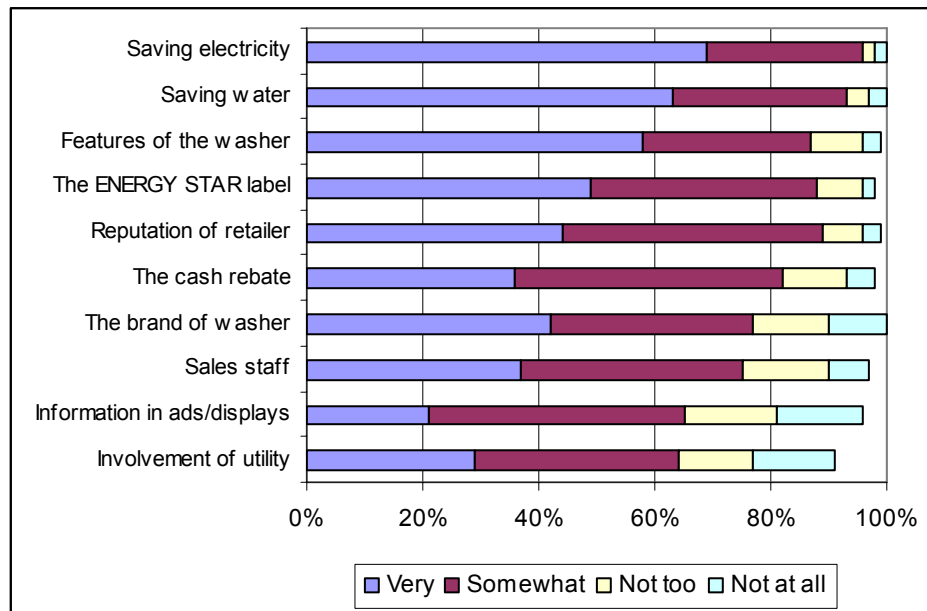
n=25 stores

### 6.3 IMPORTANCE OF THE ENERGY STAR LABEL ON DYS PARTICIPANT PURCHASE DECISION

The influence of the ENERGY STAR brand on consumer purchases was measured by the DYS participant survey. While retailers reported their opinions on whether customers value the ENERGY STAR label, these results reflect actual purchaser experiences. Respondents were asked to rate the importance of a wide variety of factors in their selection of washer models, including the ENERGY STAR label. Recall that all participants purchased at least an ENERGY STAR model, with some purchasing models with even higher efficiency. Figure 6-1 shows the results, sorted by mean rating. The majority of purchasers surveyed felt that the two most important factors in deciding to purchase their new clothes washer was saving electricity and saving water. The features of the washer ranked third, with the ENERGY STAR label ranked

fourth. About half (49 percent) of purchasers found the ENERGY STAR label to be a very important factor in their purchase decision.

**Figure 6-11**  
**Importance of Factors on Purchase Decision**



n=100

The Alliance provides support to the market in numerous ways. Alliance services include:

- Field representatives who visit retailers to educate them about ENERGY STAR products and deliver materials
- Sales training to educate retailers and their sales associates
- Point-of-purchase (POP) materials (brochures, signage)
- Coordination for regional projects such as the Double Your Savings<sup>21</sup> appliance campaign
- Cooperative marketing and trade show support
- A utility coordinator to help educate utility partners about the Alliance services and provide a contact person for them
- Coordination with utilities through the website, newsletters, and e-mails, and conference calls.

This section details the processes and specific efforts that the Alliance operates to help affect the marketplace. The evaluation includes results from the following surveys:

- **Program Staff Interviews:** KEMA conducted telephone interviews with Alliance and key project implementation staff to obtain a clear understanding of the project objectives, implementation methods, and ongoing project issues. The interviews formed the framework upon which these other surveys were conducted.
- **Appliance Retailer Store-Level Manager Survey.** We analyzed results from the 100 appliance retailer surveys by store type and region (i.e., state and east or west of the Cascades) and where we found significant differences, we report them by these categories. We also compared results to the prior retailer survey and show changes over time where such comparisons are possible. This section encompasses the project-based questions embedded in the retailer survey. The remaining questions are appliance specific and their results are found in Section 6.
- **Clothes Washer Mystery Shopper Survey.** The majority of the mystery shopper results are provided in Section 6, but this section includes details on the project-based POP materials and how they are used in the retail stores. The mystery shopper sample is small (25) so results are reported only at the aggregate level.

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<sup>21</sup> DYS was offered through 2004, but in 2005 the campaign changed to Spring into a World of Savings. The Spring Into a World of Savings promotion differs from the prior DYS promotions in that manufacturers have more flexibility in the timing and structure of their promotion.



- **Lighting Retailer Store-Level Manager Survey.** We analyzed results from 100 lighting retailer surveys by store type and region (i.e., state and east or west of the Cascades) and where we found significant differences, we report them by these categories. We also compared results to the prior retailer survey and show changes over time where such comparisons are possible. This section includes the project-based questions embedded in the retailer survey. The remaining questions are lighting specific and their results are found in Section 5.
- **Lighting Retailer Shelf Survey.** A total of 73 lighting retailers were inventoried with respect to light bulbs and fixtures in the spring of 2005. The survey data were analyzed by region and store type. We found significant differences by store type, and results are presented at the store type level. The only regional differences that were found were for the most part explained by variations in type of stores found within the region. The majority of the shelf survey findings are in the Section 5. This section details results on how the project-related materials are used in the retail setting.

**Utility Program Manager Survey.** We analyzed the results from 58 utility surveys to report on the utility reactions to the services the Alliance offers as part of the project. Utility results were analyzed both by region and by utility size as there were significant differences across each grouping. Reporting is done by both groupings as most appropriate for the particular results. The remainder of this section is organized as follows:

- Appliance retailer and mystery shopper feedback
- Lighting retailer and shelf survey feedback
- Utility feedback.

## 7.1 APPLIANCE RETAILER FEEDBACK

The appliance retailer survey included 100 participants. Appliance retailers receive support from the Alliance through field representatives who visit the retailers and provide project information, POP materials, retailer sales training, and other ongoing education. With the 2004 merger of the appliance and lighting project components into the Residential Sector Initiative, the field representative and other Alliance support services have been combined and are provided under the same project umbrella.

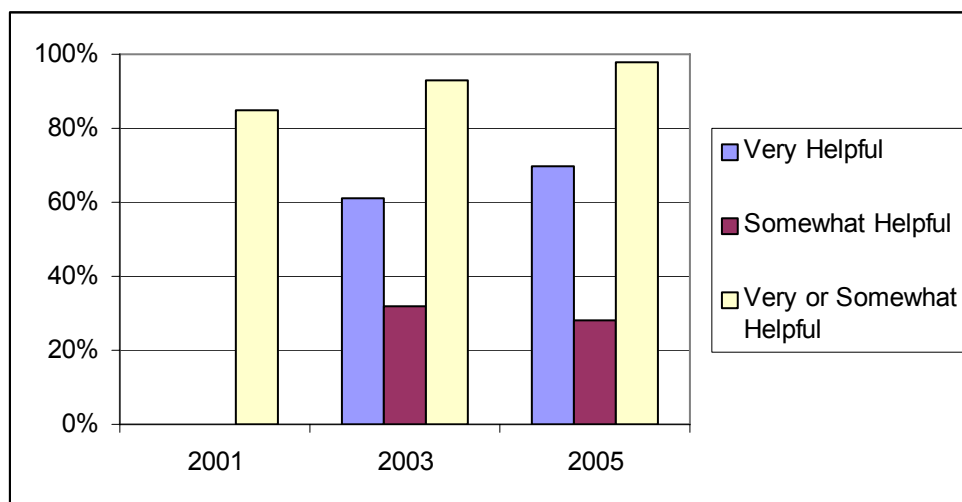
In this section, we report on appliance retailer feedback concerning their overall satisfaction with the project, the usefulness of specific project tools, participation levels and retailer satisfaction with the 2004 DYS promotion, and the use of promotional materials on appliance retailer shelves.

### 7.1.1 Overall Satisfaction

Appliance retailers receive support from the Alliance in many forms. Retailers were asked how helpful the project was in their marketing and sales efforts for ENERGY STAR-qualified appliances. Overall satisfaction with the Alliance assistance is strong with 70 percent reporting that the projects were Very Helpful. While we do not have a detailed breakdown of the 2001

results, the retailer valuation of the help they receive from the Alliance (very and somewhat helpful) has improved in the last several years from 85 percent in 2001 to 93 percent in 2003 and 98 percent in 2005 (Figure 7-1). This increase is likely due to the fact that retailers are reporting that the ENERGY STAR brand is more important in the market, coupled with the fact that the salesperson has a high level of impact in the customer decision-making process. As the project educates more salespeople over time and continues to stress the ENERGY STAR brand, these services help the retailers improve their sales process which may be one of the factors affecting the overall satisfaction.

**Figure 7-1**  
**Comparison of Retailer Valuation of the Helpfulness of the ENERGY STAR Consumer Products Project—Appliance Retailers**



2001 n=158; 2003 n=380; 2005 n=100 Questions had similar wording but the 2001 and 2005 surveys used a 5 point scale while 2003 used a 4 point scale. For each survey the total category combines the top two responses.

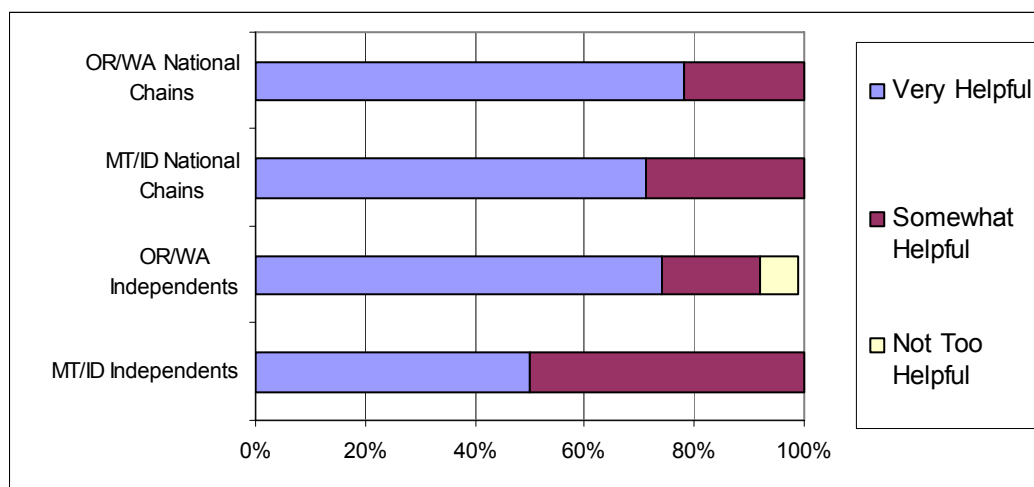
Project results indicate that retailers in the Oregon and Washington areas are more likely to find the project very helpful (77 percent) than in Montana and Idaho (59 percent) (Figure 7-2). In Montana and Idaho national chains saw the projects as very helpful more often than with independent stores. Results were more similar between store types in Oregon and Washington.

### **7.1.2 Usefulness of Specific Project Services**

Appliance retailers have continued to regard the Alliance services as useful. The ratings in Table 7-1 represent responses to the top two categories (very useful and somewhat useful). Since the early project results, in 2001, the project has developed and matured; some functions have dramatically improved since they were introduced and now are found to be highly useful by the market. Field representative support and sales training are two examples. This shows that the project created a valuable service and continues to support it in a way that the retailers value. Cooperative marketing has declined, brochure use was combined with other collateral materials on the previous report so while the actual brochure usefulness has declined, other POP materials such as Low Tack ES POP (small ENERGY STAR logo decals that are attached to ENERGY

STAR qualified units) and utility POP materials are both at or above the previous year brochure ranking.

**Figure 7-2**  
**Comparison of Appliance Retailer Valuation of the Helpfulness across Region and Store Type**



n=100 with 41 OR/WA chains, 20 MT/ID chains, 23 OR/WA independents, 16 MT/ID independents  
MT=Montana, ID=Idaho, OR=Oregon, MT=Montana, ID=Idaho

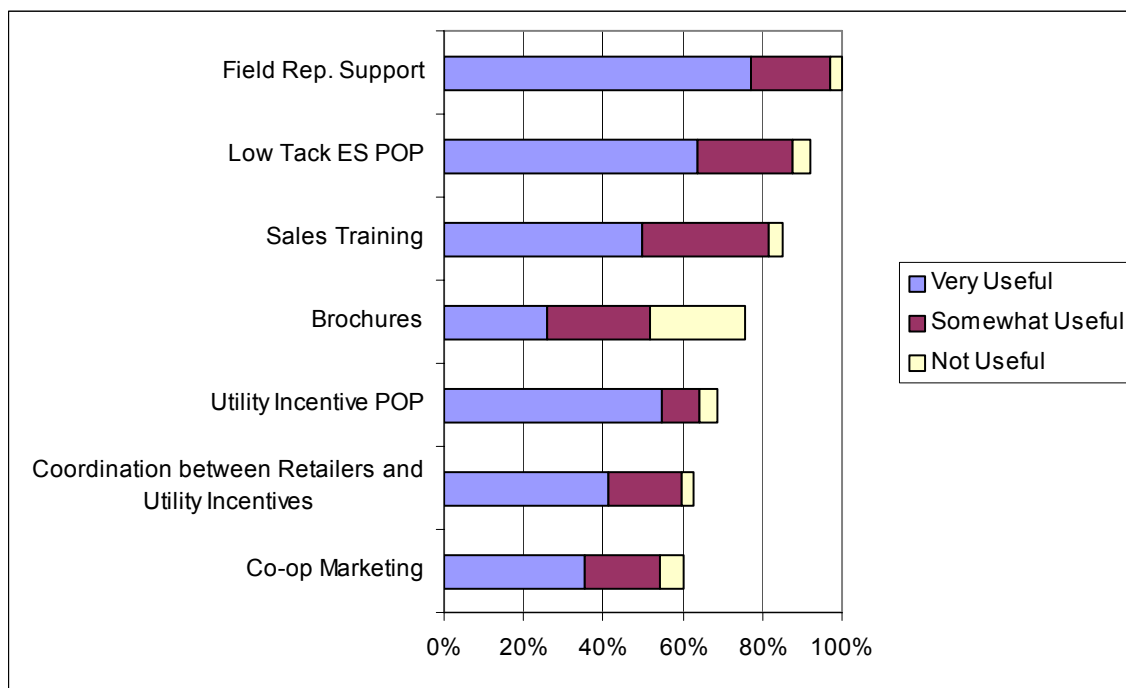
**Table 7-1**  
**Comparison of the Usefulness of Alliance Project Tools Over Time**

Project Tool	2001	2003	2005
Field Rep. Support	44%	95%	97%
Low Tack ES POP			88%
Sales Training	45%	85%	81%
Utility Incentive POP			64%
Coordination between Retailers and Utility Incentives			60%
Co-op Marketing	43%	65%	54%
Brochures	68%	92%	52%
Signage	52%	89%	
<i>n</i>	158	380	100

Questions had similar wording but the 2001 and 2005 surveys used a 5 point scale while 2003 used a 4 point scale. For each survey the total category combines the top two responses.

Field representatives maintain their position as the most useful service from the retailer perspective. The various services offered through the Alliance are listed in Figure 7-3 in the order that retailers use the services. Figure 7-3 displays the 2005 ratings that were listed in Table 7-1 with further detail on the split between very useful and somewhat useful responses.

**Figure 7-3**  
**Usefulness of Appliance Project Tools in Selling ENERGY STAR Qualified Products**



n=100 (2005)

The usefulness of services depends on the location and type of store. Table 7-2 includes the percentage of retailers who reported that the service was very useful by region and store type. Oregon and Washington retailers valued utility-related support (the utility incentive POP and utility coordination) more than Montana and Idaho. National chain retailers in Oregon and Washington also valued the low tack POP more highly than other retailers across states. National chain retailers across states valued sales training more highly than independent retailers. Independent retailers in Washington and Oregon valued cooperative marketing more highly than other retailers. .

The 2003 report indicated that utility coordination was trending upwards, with 55 percent indicating in 2001 that they found the coordination activities to be useful and 75 percent in 2003. In the 2005 retailer study this finding has dropped back down to 60 percent. Table 7-2 reports only the top rating whereas the overall usefulness comparison includes the top two ratings. This decline is likely a result of reduced focus on specific rebate programs and a shift for field representatives to a more education-focused effort with less utility coordination. This is based on the fact that numerous utilities reported that their appliance focus has diminished, and while many do have programs in place, the majority of those are not actively marketing those programs. Thus, as the field representatives have learned about and integrated the available rebates into their efforts, they are then able to focus their education on the more technical aspects of the technology.

**Table 7-2**  
**Usefulness of Appliance Project Tools by Region and Store Type**

<b>Project Tool Effectiveness</b>	<b>Oregon/ Washington National Chains</b>	<b>Montana/ Idaho National Chains</b>	<b>Oregon/ Washington Independents</b>	<b>Montana/ Idaho Independents</b>	<b>n</b>
Field Rep. Support	77%	80%	68%	89%	97
Low Tack ES POP*	81%	58%	50%	65%	93
Sales Training	60%	65%	42%	36%	98
Brochures	28%	18%	35%	15%	99
Utility Incentive POP*	74%	4%	86%	21%	97
Coordination between Retailers and Utility Incentives*	54%	19%	54%	21%	100
Co-op Marketing*	31%	29%	53%	18%	100
n	41	20	23	16	

\*Statistically significant across all groups

### **7.1.3 Double Your Savings Campaign**

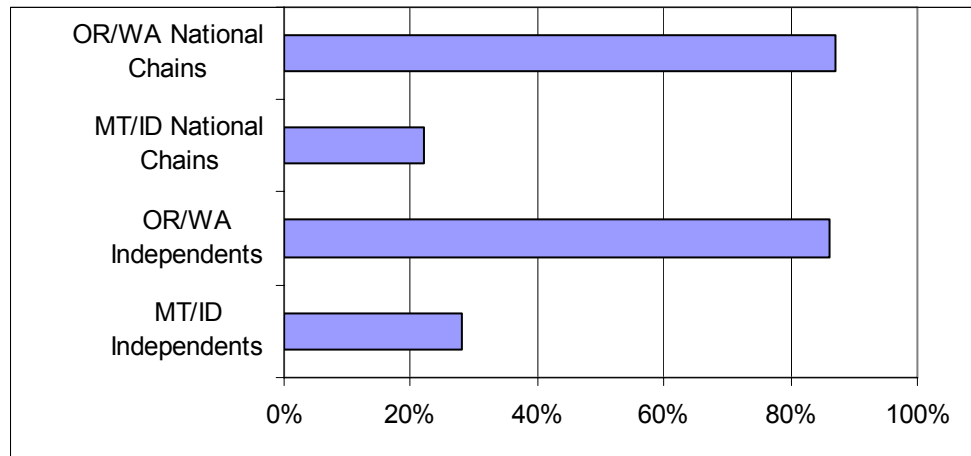
The Double Your Savings (DYS) campaign was a national spring promotion.<sup>22</sup> The promotion consisted of electric utilities in Oregon, Washington, Idaho, and Montana. It offered mail-in rebates and facilitated applications for manufacturer rebates for the purchase of ENERGY STAR-qualified clothes washers. The Alliance provided merchandising and marketing support to retailers and utilities. Some utilities offered a higher rebate for the purchase of ultra-high-efficiency (UHE) clothes washers, which have a higher energy and water efficiency rating (modified energy factor >1.8) than ENERGY STAR models.

Retailers participated in the DYS campaign at a rate of 63 percent. This is an increase over the 2003 participation rate of 56 percent. Stores in Washington and Oregon had a very high level of participation (86 percent) while those in Idaho and Montana had a low level of participation (25 percent). Overall, the 2004 participation results are consistent across store type. (Figure 7-4).

Retailer satisfaction with the DYS campaign was also more regionally different than by store type. Satisfaction was high overall (67 percent very successful and 26 percent somewhat successful). The DYS satisfaction ratings for the 2003 promotion were slightly higher than in 2005, with 84 percent reporting that they were very satisfied with the promotion and the remaining 16 percent saying they were somewhat satisfied. From the current findings, stores in Montana and Idaho appeared to be the least satisfied with the promotion's success (Figure 7-5).

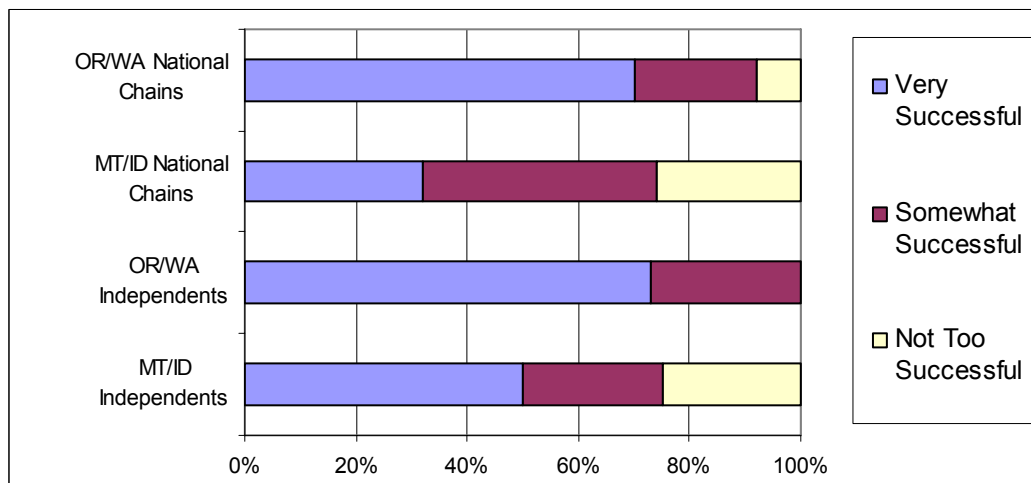
<sup>22</sup> DYS was offered through 2004, but in 2005 the campaign changed to Spring into a World of Savings. The Spring Into a World of Savings promotion differs from the prior DYS promotions in that manufacturers have more flexibility in the timing and structure of their promotion.

**Figure 7-4**  
**Participation in DYS Promotion by Region and Store Type**



n=100 with 41 OR/WA chains, 20 MT/ID chains, 23 OR/WA independents, 16 MT/ID independents

**Figure 7-5**  
**Retailer Satisfaction with the DYS Promotion for their Store**



n=100 with 41 OR/WA chains, 20 MT/ID chains, 23 OR/WA independents, 16 MT/ID independents

Retailers were asked how satisfied they were with the services they received from the Northwest ENERGY STAR Program during the DYS promotion. The results were similar to the store success ratings, with 68 percent very satisfied and 21 percent somewhat satisfied.

Retailers who participated in the DYS campaign were asked how they felt the promotion could be improved. They felt the DYS campaign would be more successful at their store with more money to the customer and more advertising.

Retailers suggested that the campaign could be improved in the following ways:

- Bring the promotion back, extend the time period, or make the promotion last longer
- Provide bigger signage
- Provide more brochures and other POP materials
- Allow more models to qualify and/or clarify promotion guidelines
- Provide information about the promotion to retailers sooner and include tax credit details
- Offer salesperson incentives
- Increase rebate amounts
- Provide more sales training/make sure all staff are aware of the promotion
- Support more advertising
- Create more communication between stores, energy reps, and manufacturers
- Provide a better customer service line—phone line always had a full voice mail box when called with questions.

#### **7.1.4 Clothes Washer POP Materials**

While the previous results are based on the appliance retailer survey, we present one set of results from the mystery shop survey that pertains specifically to the presence of clothes washer POP materials. (See Section 6 for a full discussion of the mystery shop survey and results.)

The first set of information gathered at each mystery shop appliance store visit describes the visual promotion of energy-efficient washing machines. Shoppers noted the presence of any energy-efficiency-related promotional materials, including banners, flyers, brochures, product labels, and shelf signs. We found the materials most often used to be decals attached directly to the units and flyers available for the shopper to take with them. Each of the POP materials is used by fewer than 50 percent of retailers surveyed, as shown in Table 7-3. However, 86 percent of retailers use at least one type of POP material.

**Table 7-3**  
**Promotional Materials Used for Energy-Efficient Clothes Washers**

Promotional Materials	Percentage of Retailers
Door Decals	41%
Flyers/Brochures	36%
Shelf Signs	32%
Product Labels	27%
Banners	14%
None	14%
Number of Stores in Sample	25

## 7.2 LIGHTING RETAILER FEEDBACK

The lighting retailer survey included 100 participants. Lighting retailers receive support from the Alliance in similar ways as they do with the appliance portion of the project. With the 2004 merger of the two project components into the Residential Sector Initiative, the services have been combined and are provided under the same project umbrella.

In this section, we report on lighting retailer feedback concerning their overall satisfaction with the project, the usefulness of specific project tools, participation levels and satisfaction with the 2004 Change a Light promotion, and the use of promotional materials on lighting retailer shelves.

### 7.2.1 Overall Satisfaction

Overall, 78 percent of retailers find the project to be helpful to their marketing and sales efforts for ENERGY STAR compact fluorescent lamps (CFLs) (very helpful, 33 percent and somewhat helpful, 45 percent). While retailers in Washington and Oregon report higher ratings in the very helpful category, the retailers in Montana and Idaho have much higher overall satisfaction with the services and their help in marketing and sales (Figure 7-6).

The comments retailers provided as to why the project was not helpful included:

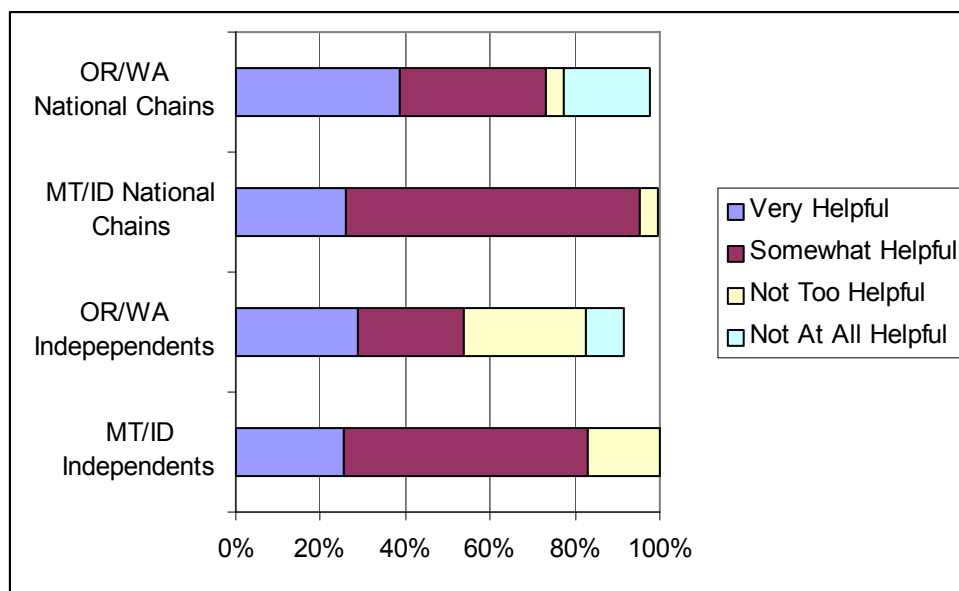
- Do not see the field representative often enough (common complaint)
- Poor coordination between the utility and supplier availability—hard to get fixtures that qualify for the project
- Not aware about the project efforts
- No feedback on the projects or interaction with other players
- People do not utilize the POP materials very much
- We are stuck with old stock
- Need more help from the reps to create valuable advertising and POP materials and/or information.

### 7.2.2 Usefulness of Specific Project Services

The Alliance supports the lighting retailers with a series of services geared towards increasing market education, and enhancing retail sales. The services are listed in Figure 7-7 sorted by the overall level of use that each service received from the lighting retailer community. As with appliance services, the field representative support is used by the highest percentage of retailers, with just over three-quarters (76 percent) of all retailers, indicating field representatives were useful. Overall, all of the project tools were useful to at least 40 percent of the retailers.



**Figure 7-6**  
**Comparison of How Helpful the ENERGY STAR Consumer Products Project has been to Lighting Retailers by Region and Store Type**

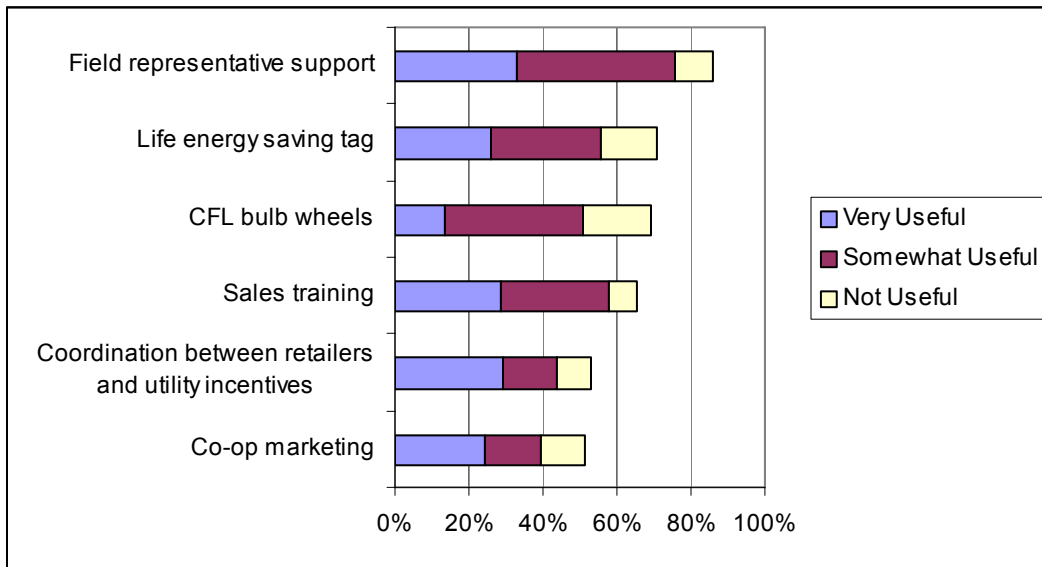


n=100; 43 OR/WA chains, 25 MT/ID chains, 21 OR/WA independents, 11 MT/ID independents

An interesting comparison can be made with both the appliance and lighting responses. In general, the usefulness ratings provided to the appliance retailers are significantly higher than the rating for the same service provided to the lighting retailers. For example, 77 percent of appliance retailers rated the field representative support as very useful with an additional 20 percent somewhat useful, for a total of 97 percent of appliance retailers indicating that the field reps were useful. The lighting retailers had lower responses, with 33 percent stating field representatives were very useful and 43 percent somewhat useful, for a total of 76 percent. The same field representatives are providing both services, so the perceived usefulness in the lighting market is lower than in the appliance market. Note that this question focused on CFL services and not fixtures. The survey did not contain a separate set of ratings as to how the various Alliance services helped the fixture market (Figure 7-8).

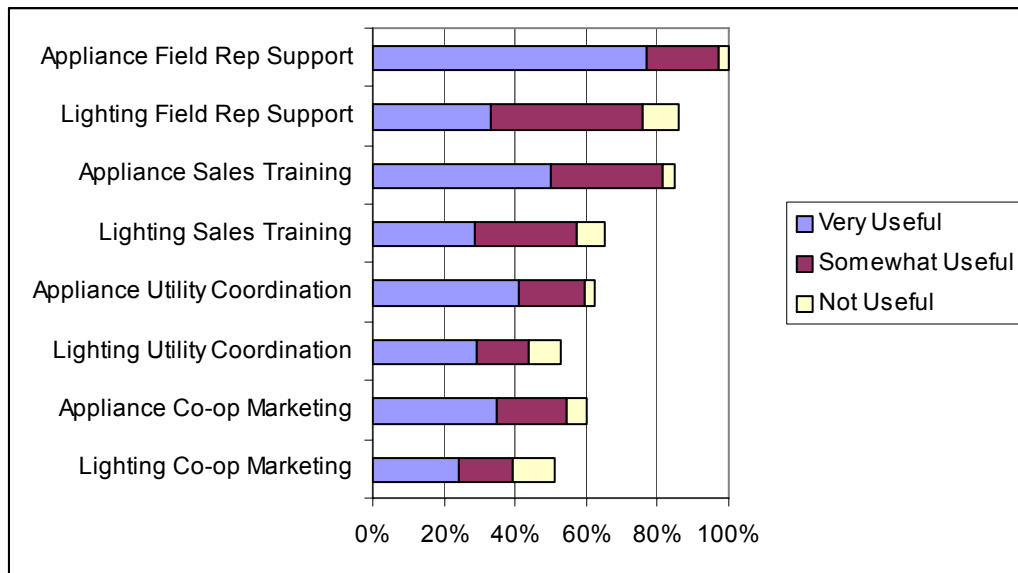
As with the appliance project, the project usefulness varies by region and store type. Figure 7-9 includes the percentage of retailers who indicate that they found the project tool to be very useful. Oregon and Washington chains reported that the most useful items for them were coordination between retailers and utility incentives (36 percent) and field representative support (31 percent). Montana and Idaho chains valued sales training the highest (51 percent) followed

**Figure 7-7**  
**Usefulness of Lighting Project Tools in Selling CFLs**



n=100

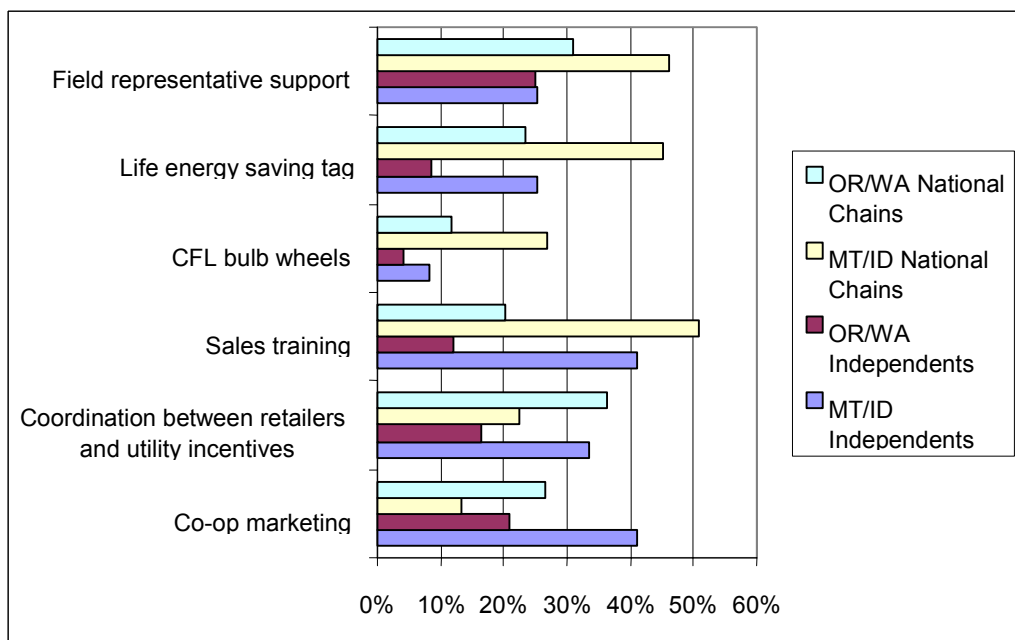
**Figure 7-8**  
**Comparison of Usefulness of Project Tools by Appliance and Lighting Retailers**



n=100

by field representative support (46 percent), and also gave the highest ratings of all retailers to POP materials (energy saving tag and bulb wheels). Oregon and Washington independent stores valued services less than the chains in all cases with the highest usefulness ratings going to field representative support (25 percent) and cooperative marketing (21 percent). Montana and Idaho independents valued cooperative marketing and sales training the highest (both at 41 percent).

**Figure 7-9**  
**Usefulness of Appliance Project Tools by Region and Store Type**

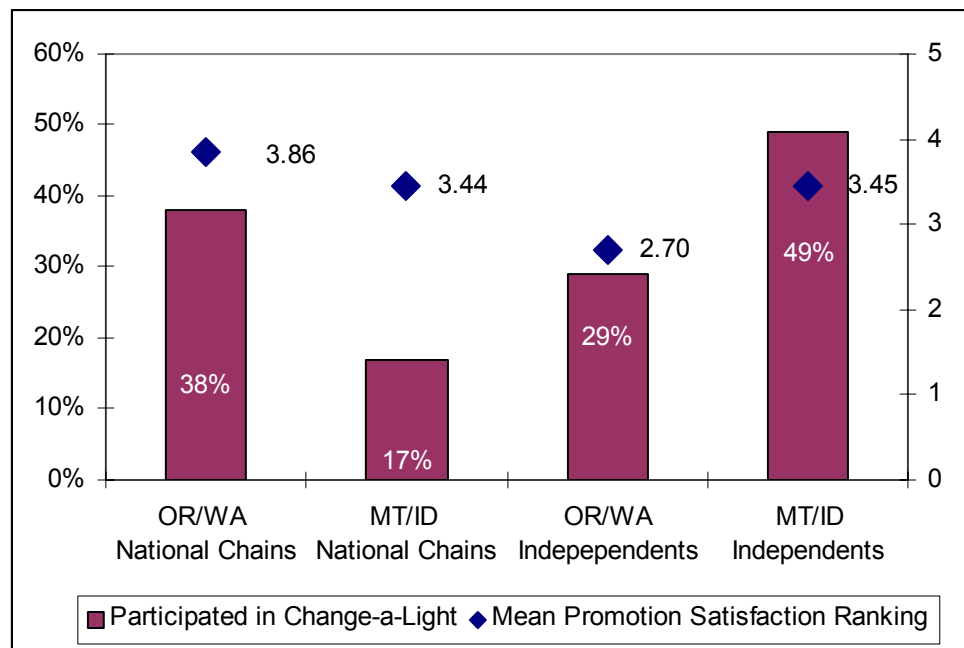


n=100; 43 OR/WA chains, 25 MT/ID chains, 21 OR/WA independents, 11 MT/ID independents

### 7.2.3 Change-a-Light Promotion

The Change a Light promotion is a national lighting program sponsored by the Department of Energy's ENERGY STAR program that is launched each October during the fall lighting season. One-third of all retailers participated in the recent program (34 percent). The level of participation is still low. It dipped in 2003 to 21 percent after a 33-percent participation rate in 2001. Figure 7-10 illustrates the current participation level by region as well as the average ranking of the success of the program at increasing CFL sales. The program success was measured on a scale of 1 to 5, with 1 being not at all successful and 5 very successful. With the exception of independent stores in Oregon and Washington, rankings were all on the positive side of the success scale.

**Figure 7-10**  
**Participation in the 2004 Change-a-Light Promotion and CFL Sales Success by Region and Store Type**



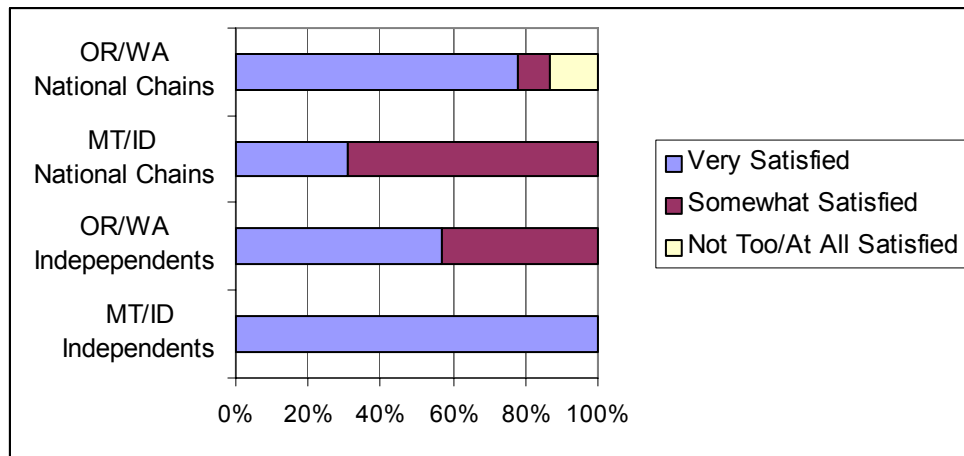
n=100; 43 OR/WA chains, 25 MT/ID chains, 21 OR/WA independents, 11 MT/ID independents

Lighting retailers indicated that they did not participate in the Change a Light for the following reasons:

- Lack of customer response to these promotions
- We do not control the decision, our corporate office does
- We were not given enough advance notice
- Was not aware of the promotion
- Our representative did not inform us of the program
- No funds for advertising or additional storage space for bulbs
- Promotion conflicted with other store activities
- Too busy.

Satisfaction with Alliance project services during the Change a Light promotion was generally high and retailers felt that the project met their needs; however the number of retailers who were very satisfied was notably lower in the Montana and Idaho national chain market (Figure 7-11).

**Figure 7-11**  
**Satisfaction with the Alliance Project Services during the Change a Light Promotion by Region and Store Type**



n=100; 43 OR/WA chains, 25 MT/ID chains, 21 OR/WA independents, 11 MT/ID independents

Retailers cited the following positive issues in their satisfaction with the Change-a-Light promotion and the services they received from the Alliance:

- Lower prices helped sell customers on trying CFLs
- The Alliance did a good job with POP materials and training
- We already promote CFLs heavily
- Utility promotions help drive customer awareness
- Sales were good.

They also cited several negative comments about the Change-a-Light promotion:

- Not enough money for advertising or marketing materials
- Promotion draws interest, but not much sales impact
- CFLs still do not work in many fixtures.

Retailers suggested the following improvements for the promotion in the future:

- More lead time before the promotion
- More variety of products (more compact, higher wattage)
- Better up front promotion
- More floor demonstrations
- Assistance getting signage and information out of the store when the promotion ends
- Have representative come to the store during the promotion
- More training and representative participation

- Offer more often or for a longer run
- Lower prices
- More money for advertising
- More ready-made graphics.

Retailers reported the following ways that the ENERGY STAR project could help retailers:

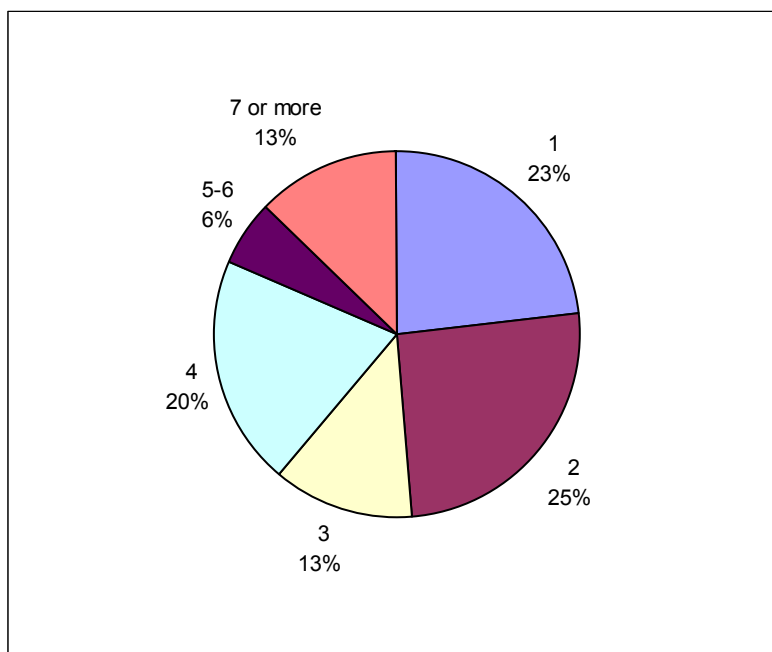
- Do a survey to determine retailer product availability
- Advertise on TV and radio
- Better training
- Better signage
- More advance notice of representative visit
- More buy-down projects
- More consumer education
- Create more floor demonstrations and promotional materials.

While retail participation in the Change-a-Light promotion is about one-third of the lighting retailers, almost two-thirds (63 percent) have run some other CFL promotion in the past year. Retailers who did participate in promotions ran an average of 2 promotions per year. Figure 7-12 illustrates the range in the number of additional promotions. When the Change-a-Light participants are combined with the other promotions, 75 percent of all retailers do some promotion throughout the year. One fifth of the retailers (20 percent) did both the Change-a-Light and their own other promotion.

Those that have not opted to run any additional CFL promotions cited several reasons:

- Availability of CFLs
- Lack of customer interest
- Decision made at a higher, corporate level
- Bulbs are a small part of our business
- Can not afford to invest in a promotion
- We do not do any advertising
- Manufacturers or utility do not offer any specials
- Can not compete with big box prices.

**Figure 7-12**  
**Number of Additional Promotions**

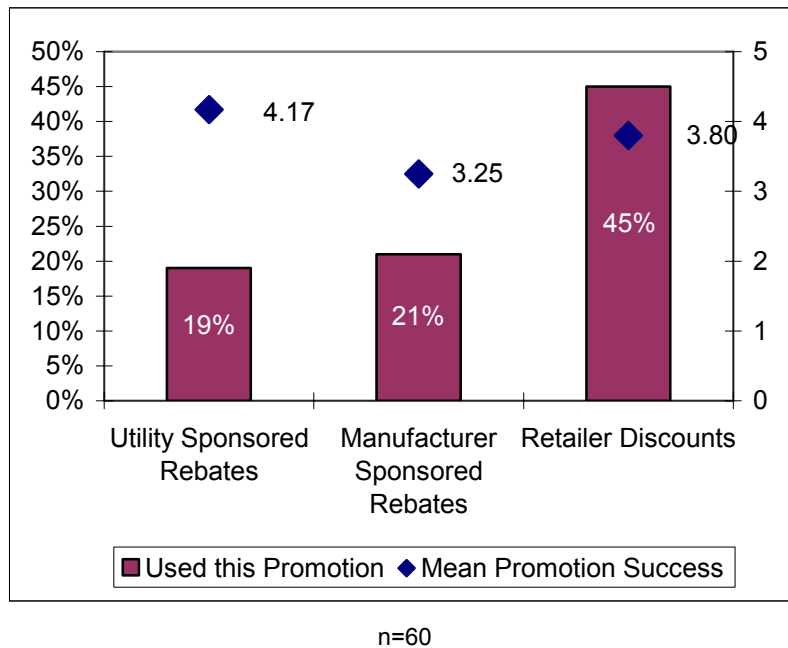


n=60 retailers who indicated that they performed additional promotions

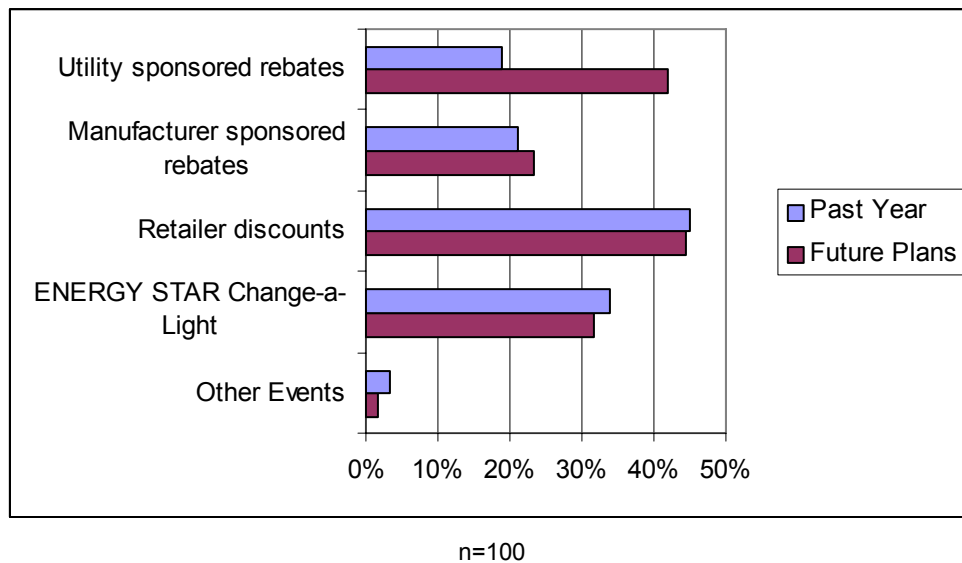
Additional promotions were offered using utility sponsored rebates, manufacturer sponsored rebates, retailer discounts, as well as a single recycling promotion. The percentage of retailers that used the various promotional approaches is included as Figure 7-13. This figure also lists the mean success rating for each type of promotion. Promotions were rated on their success in increasing CFL sales. The rating used a scale of 1 to 5, with 1 being not at all successful and 5 very successful. Retailer discounts were the most common type of promotion although utility rebates were ranked as the most successful way retailers felt they were able to increase CFL bulb sales. The success rating is created by taking a mean customer response to the retail feedback on the 1-to-5 scale.

As part of the questioning about promotions, retailers were asked to report on their intentions for running promotions in the coming year (Figure 7-14). Retailers expressed an interest in participating in projects next year at similar levels to the current reported activity with the exception of the utility sponsored rebates. Twice as many retailers reported that they plan to run utility-sponsored rebate programs in the future as compared to last year. It is not clear where retailers received the information about future utility promotions. The rate of planned participation in utility-sponsored rebates is approximately 40% for Oregon and Washington retailers and Montana and Idaho chains, and a very high 66 percent in Montana and Idaho independent stores. The higher participation levels in Montana and Idaho can in part be attributed to a large project underway (240,000 bulbs in 2005) through Northwestern Energy.

**Figure 7-13**  
**Additional Promotions Offered by Retailers and Success Rating at Increasing CFL Sales**



**Figure 7-14**  
**Comparison of Previous and Future Intentions for CFL Programs**



#### 7.2.4 Lighting POP Materials

While the previous results are based on the lighting retailer survey, we present several results from the lighting retailer shelf survey that pertains specifically to the presence of CFL and ENERGY STAR fixture POP materials. (See Section 5 for a full discussion of the lighting shelf survey and results.)



### 7.2.5 Promotion

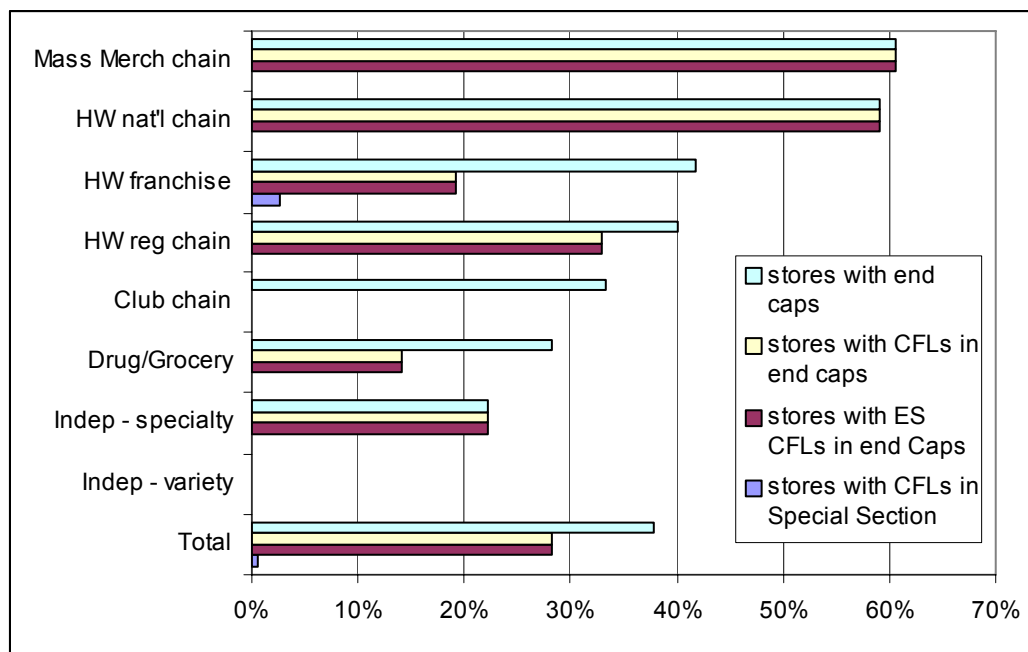
In the final section of the lighting shelf survey, the surveyor collected information on CFLs, ENERGY STAR CFLs and ENERGY STAR fixture promotions found at each store. It should be noted that the majority of Alliance promotional support occurs in the fall, coinciding with the ENERGY STAR program's fall Change a Light promotion. This survey will likely be repeated again in the fall, which will allow for nonpromotion-to-promotion comparisons. These results likely show the baseline levels of promotion.

#### Bulbs

Figure 7-15 summarizes the bulb promotions by store type and over all stores. Almost 40 percent of stores have end-cap bulb displays of some sort, with almost 30 percent having ENERGY STAR CFL displays. There were no stores that had CFL displays that were not ENERGY STAR. Thus, almost all end cap bulb displays were promoting ENERGY STAR CFLs. Almost no stores displayed CFLs in a special section.

There are some differences in display patterns across store types. While over half of mass merchandise and national hardware store chains promote ENERGY STAR CFLs via end-cap displays, independents and franchise hardware stores, which are often independently operated, are much less likely to carry such displays. Independent variety stores do not have any occurrences of any of the display patterns.

**Figure 7-15**  
**Promotion of CFLs and ENERGY STAR CFLs by Store Type**



n by store type see Table 5-8

HW=hardware, indep=independent, nat'l=national, reg=regional, mass merch=mass merchandise

Table 7-4 shows the types of POP displays that are being used by stores, again, during off-promotion periods. Overall, less than half the stores that sell CFLs and that are visited by the project's field representatives are using POP displays. The most common display being used is retailer-generated signs and bulb wheels. Hardware stores in general are most likely to be using POP, with the other store types use POP infrequently.

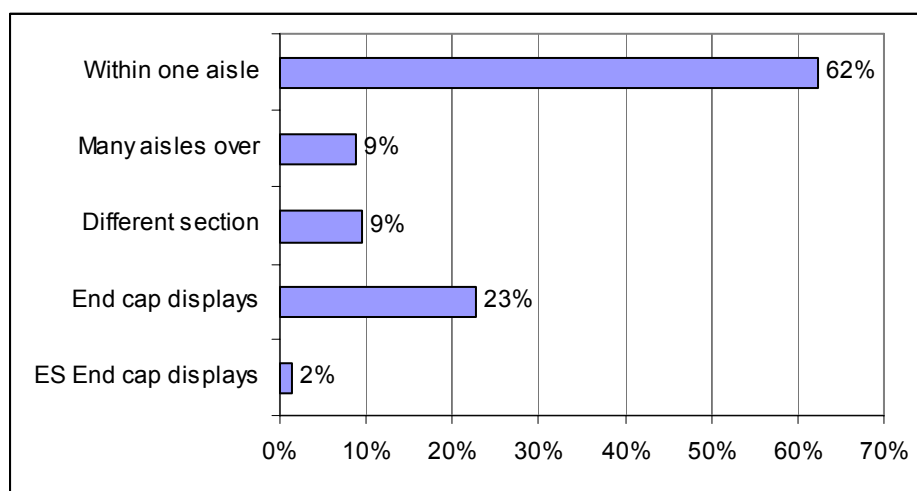
**Table 7-4**  
**CFL Point-of-Purchase Displays by Store Type**

Store Type	Instant rebate	Retailer sign	Brochures	Clings	Aisle Violator	Bulb Wheel	N stores
National chain hardware	0%	45%	14%	45%	14%	23%	7
Franchise hardware	3%	48%	16%	9%	0%	52%	13
Regional hardware chain	7%	20%	0%	21%	0%	21%	10
Independent - variety	0%	0%	0%	33%	0%	33%	3
Mass Merchandise chain	0%	33%	0%	22%	0%	6%	9
Drug/Grocery	4%	15%	0%	13%	0%	19%	19
Club chain	0%	33%	0%	0%	0%	0%	3
Independent - specialty	0%	11%	0%	0%	0%	11%	9
Total	2%	27%	4%	16%	1%	23%	73

### **Fixtures**

Figure 7-16 shows the results for the ENERGY STAR fixture displays. Recall from Section 5 (Table 5-11) that only 30 percent of stores that sell CFLs also sell ENERGY STAR fixtures. Of those stores, most (62 percent) locate their ENERGY STAR fixture displays within one aisle of their standard light fixture displays. Only 9 percent locate them in a separate section. About one-quarter of stores (23 percent) use end-cap displays, while almost none of those displays mention ENERGY STAR fixtures.

**Figure 7-16**  
**ENERGY STAR Fixture Displays**



n=22

### 7.3 UTILITY FEEDBACK

This section describes the results from the utility survey that was administered to 58 utilities that receive services from the Alliance. The sample includes a census of large and investor-owned utilities as well as an attempted census of all utilities who had started or are planning a new homes project. The survey captured utility responses in three size groups: large, medium, and small which are determined by the utility's customer base. PECO, the Alliance's project contractor, provided the utility size definitions and they correlate with size distinctions made in previous reports. Many tables and charts throughout this section provide information using the utility size sub-groups. These provide insight into the different ways the various utilities operate. The study included a census of the 10 large utilities, 25 of the 39 medium utilities (64% of the utilities), and 23 of the 86 small utilities (27%). The utility results are not weighted. The customers of the 10 large utilities in the sample make up 78 percent of the population. The medium sample frame represents another 10 percent and the small utilities represent 3 percent of the population. A total of 91 percent of the population was represented by the utilities in the survey.

Utilities receive a range of services from the Alliance. These include working with the utility coordinator, meeting with the field representatives, using the [northwestenergystar.com](http://northwestenergystar.com) web site, receiving information via e-mail, or participating in Alliance sponsored conference calls or other coordination efforts. The Alliance focused efforts in 2004 to create and enhance the project web site ([www.northwestenergystar.com](http://www.northwestenergystar.com)) and continues to improve services across the board. This section details the utility use of the various services and feedback on how the services provide value to the various utility customers.

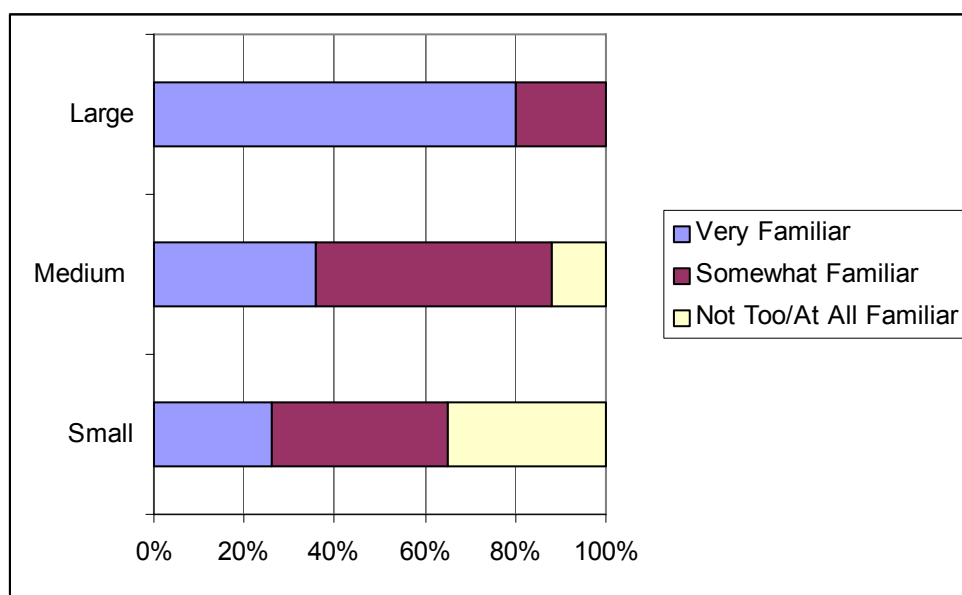
This section is organized as follows:

- Awareness of Alliance services
- Utility coordinator
- Field representatives
- [northwestenergystar.com](http://northwestenergystar.com) website
- Use of "Utility Resource Kit" service offerings
- Alliance sponsored conference calls
- Value Ranking of Alliance services
- Marketing services
- Overall Alliance offerings and future direction
- Utility rebate program activity.

### 7.3.1 Awareness of Alliance Services

All of the large and investor-owned utilities are either very familiar (80 percent) or somewhat familiar (20 percent) with the services that the Alliance offers. As the utility size decreases, familiarity also declines (see Figure 7-17). About one-third (35 percent) of small utilities were not familiar with the services available to them through the Alliance. While this is a relatively large percentage, most of the utilities with little familiarity were so small that they did not have staff or time to commit to providing energy-efficiency services and had no project activity or planned activity.

**Figure 7-17**  
**Familiarity with Alliance Services by Utility Size**

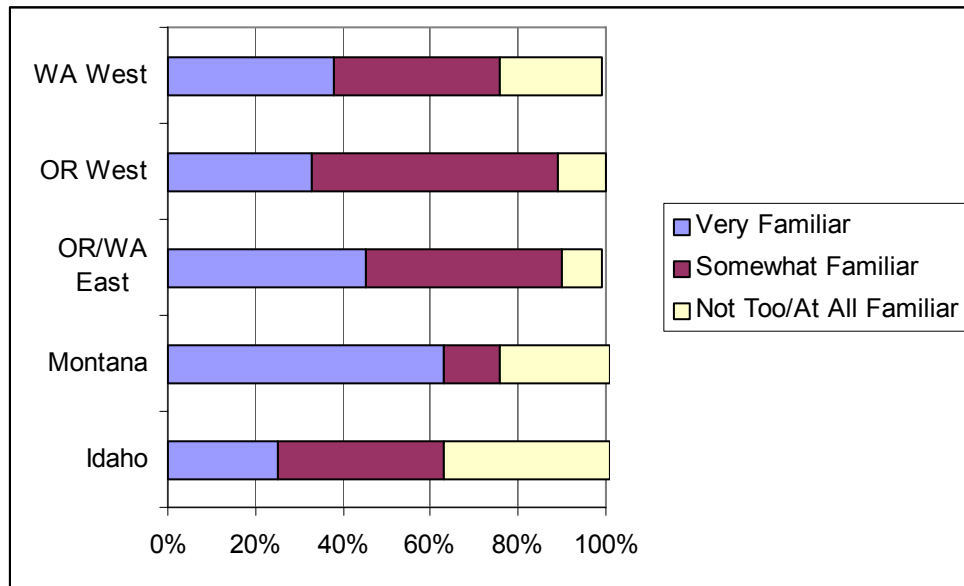


n=58; 10 Large, 25 Medium, 23 Small

Familiarity with the Alliance services also varies by region. Montana displayed the highest familiarity despite the fact that six of the eight utilities in the region were in the small category. Except for Montana, most of the regional differences can be explained by the make-up of the sample frame. For example, Idaho has numerous small utilities, which is why there are so many utilities that are not familiar with the services in that state. Figure 7-18 provides an overview by region.

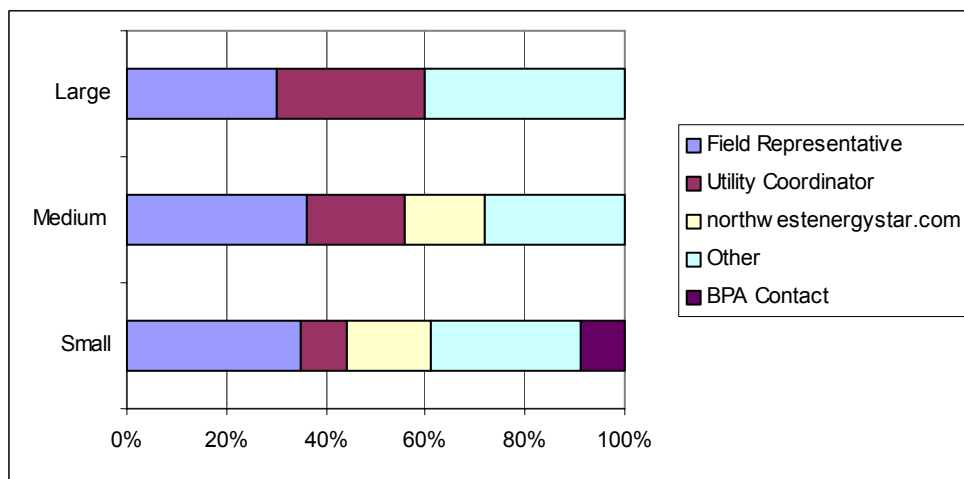
When asked who utilities turn to first when they have questions about their ENERGY STAR Consumer Products Project or other appliance or lighting questions, the field representatives (34 percent), utility coordinators (17 percent), and northwestenergystar.com website (14 percent) were common resources. For all of the utility sizes, the field representatives provide the most common single resource that utilities turn to with questions (Figure 7-19).

**Figure 7-18**  
**Familiarity with Alliance Services by Region**



n=58: 13 WA West, 18 OR West, 11 OR/WA East, 8 Montana, 8 Idaho  
 MT=Montana, ID=Idaho, OR=Oregon, MT=Montana, ID=Idaho

**Figure 7-19**  
**First Resource for Utilities with Consumer Products Questions**



n=58; 10 Large, 25 Medium, 23 Small

Numerous utilities reported that they go to other resources. The following were the other resources that utilities use to answer their questions:

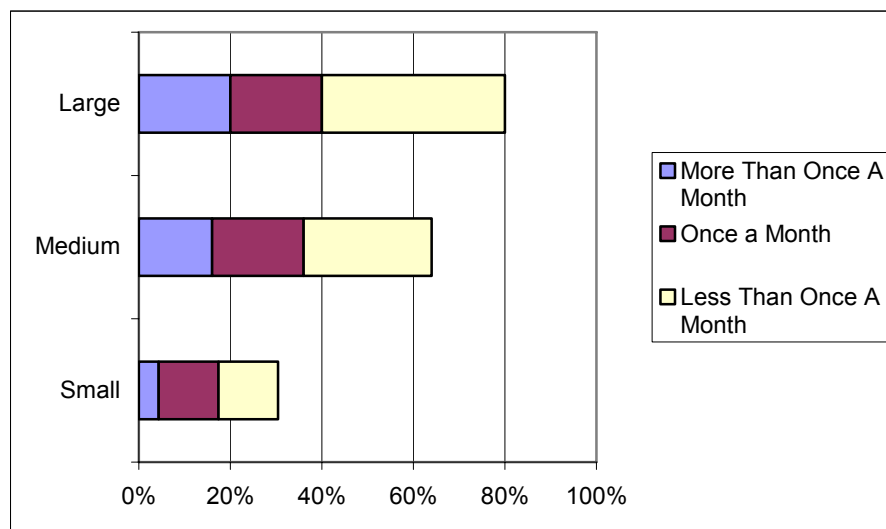
- No one—no issues have come up

- An implementation contractor who may be managing other programs for the utility and provide another source of information outside of the Alliance support.
- A neighboring (larger) utility staff member
- ENERGY STAR nationwide contacts
- National Rural Electric Cooperative Association
- Oregon Office of Energy.

### 7.3.2 Utility Coordinator

The utility coordinator is a PEGI (the Alliance's project contractor) function. The role is accomplished by one full-time employee who is tasked with disseminating information and materials to utilities to assist them with their various Residential Sector Initiatives. As the ENERGY STAR New Homes project has become a focus, there is less time for the utility coordinator to dedicate to serving the Consumer Products Project. However, utilities do contact the coordinator frequently and use the services to help promote their package of services. As shown in Figure 7-20, large utilities contact the coordinator much more frequently than smaller utilities. While the majority (80 percent) of large utilities use the services of the utility coordinator, only 30 percent do in the small utility sector. Overall, 53 percent of the utilities used the services of the utility coordinator. This is down from 87 percent in 2003, at which time the utility coordinator was an Alliance staff member who did not have formal project management responsibilities. In 2003, 100 percent of large utilities reported using the services, 95 percent of medium utilities, and 69 percent of small utilities. This decline may be attributable to the fact that as the project has shifted to a focus on new homes, there are fewer utilities that are starting their projects right now so the pool of active utilities needing significant project help has decreased.

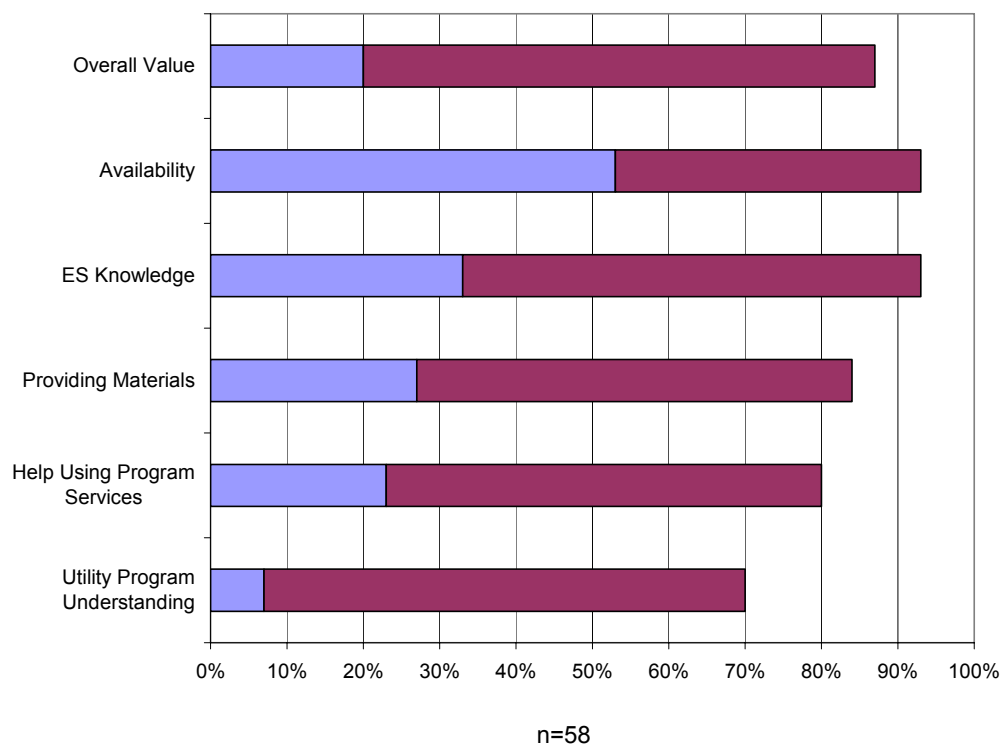
**Figure 7-20**  
**Frequency Utilities Contact the Utility Coordinator by Utility Size**



n=58; 10 Large, 25 Medium, 23 Small

Utilities value the utility coordinator services (Figure 7-21). They were asked to rate various components of the services they had received from the coordinator using a scale containing excellent, good, fair, poor, and not applicable. Satisfaction ratings (including both excellent and good responses) ranged from 70 percent to 93 percent for the various elements of the service with 83 percent of all utilities stating that the overall value was excellent (20 percent) or good (63 percent).

**Figure 7-21**  
**Utility Coordinator Satisfaction Levels**



Utilities provided suggestions as to how the utility coordinator could be of more help to them. Feedback followed the general level of expectations seen at the various size utilities. For example, a large utility felt that weekly contact was appropriate, while medium utilities requested more proactive communications from the coordinator, and small utilities asked for individual or more focused requests with the assumption that the coordinator was not available as much to them.

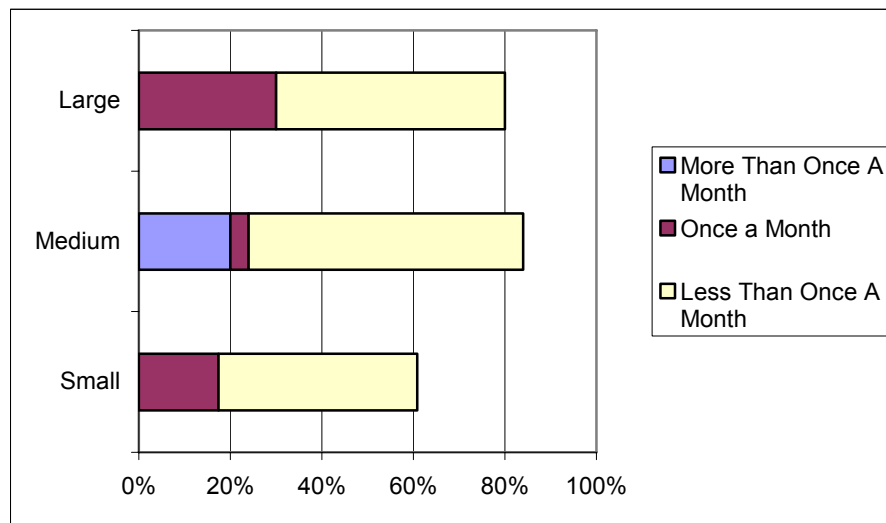
### 7.3.3 Field Representatives

There are currently nine full-time field representatives serving the Alliance project (Figure 7-22). Field representatives operate throughout the region. The medium-sized utilities met with their

field representatives most frequently. Overall, 74 percent of utilities use the services of the field representative. This is similar to 2003 (82 percent) and to 2001 (76 percent). Most (80 percent) of large utilities have communicated with their representative in the last 6 months to 1 year (66 percent in 2003), 84 percent of medium utilities (95 percent in 2003), and 61 percent of small utilities (75 percent in 2003). In several cases, large and some medium-sized utilities stated that they had their own field representatives so they tended to work less with the Alliance contacts. For smaller utilities, the use of the field representative exceeds the use of the utility coordinator. Many of the small utilities receive their primary project contact through the field representative.

Utilities value the field representative services as shown in Figure 7-23. Satisfaction ratings (including both excellent and good responses) ranged from 64 percent to 85 percent for the various elements of the service with 79 percent of all utilities stating that the overall value was excellent (24 percent) or good (55 percent). One of the most common concerns that came up when discussing the field representatives with utilities was the high rate of turnover among the field representatives and the fact that as the representatives changed, the utilities (and presumably the retailers as well) had to reestablish relationships. This seems to create more challenge for the utilities, as they do not always have a resource to turn to.

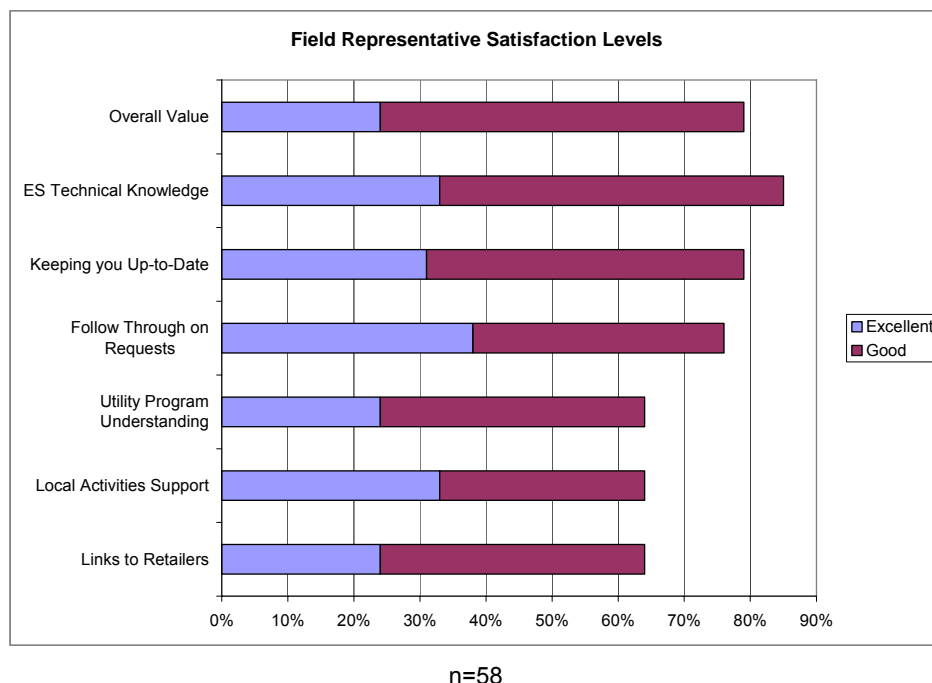
**Figure 7-22**  
**Frequency Utilities Meet with their Field Representative by Utility Size**



n=58; 10 Large, 25 Medium, 23 Small



**Figure 7-23**  
**Field Representative Satisfaction Levels**



The values for the field representative and the utility coordinator compare fairly well. The overall value (excellent and good) of the utility coordinator is slightly higher (87 percent) than the field representative (79 percent) but both services received primarily excellent and good responses throughout. The utility coordinator received the highest number of excellent ratings for availability (53 percent) and then ENERGY STAR knowledge (33 percent) while the field representatives received their highest ratings for follow through on requests (38 percent) and both ENERGY STAR knowledge and local activities support (both at 33 percent).

Utilities provided suggestions as to how the field representatives could be of more help to them. Utilities of all sizes requested more coordinated efforts between field representatives and utilities and also expressed an interest in the field representatives making more of an effort to establish a relationship with the utility contacts.

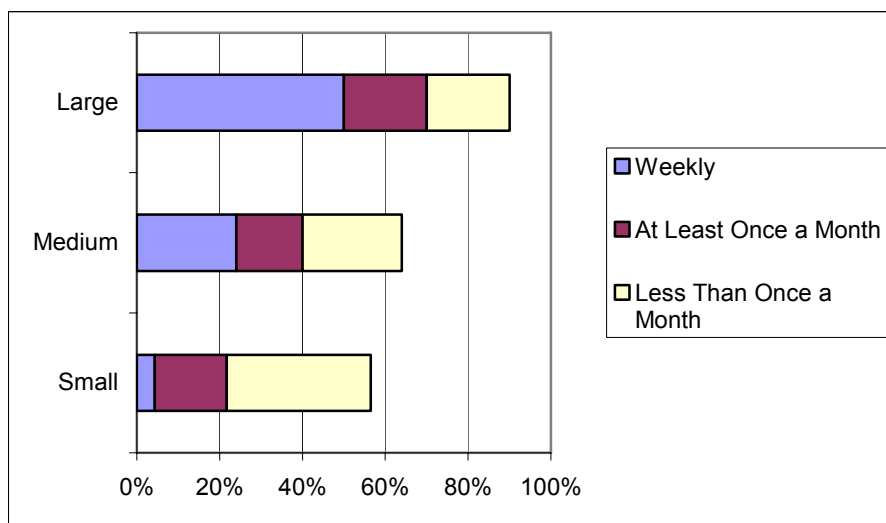
#### **7.3.4 *northwestenergystar.com* Web Site**

The northwestenergystar.com web site was launched in 2004. An impressive two-thirds (66 percent) of utilities that participated in the survey have used the web site. The site can be used for all elements of the Residential Sector Initiative. Two-thirds (66 percent) of utilities use the site to support their appliance needs, 50 percent use the site for lighting, and 61 percent use the site for new homes questions. Several utilities reported that they refer customers to the website regularly to help answer technical or project questions related to ENERGY STAR equipment. While the next several tables provide information about the web site, Section 7.3.7, Value

Ranking of Alliance Services, includes a comparison of the value utilities place on the web site relative to the utility coordinator, field representatives, and other Alliance service.

Larger utilities use the web site the most (90 percent), with 64 percent of medium-sized utilities and 57 percent of small utilities using the site. Use of the web site is not only more frequent among the utilities in each group, but larger utilities are also more regular visitors to the site (Figure 7-24).

**Figure 7-24**  
**northwestenergystar.com Web Site Frequency and Overall Use by Utility Size**



n=58; 10 Large, 25 Medium, 23 Small

Overall, 92 percent of utilities rated the web site as easy to use, with an additional 5 percent indicating that it was very easy to use. Most of the comments about the site noted that recent changes had improved the ease of use and that utilities liked the additional information that has been added over the year. Utilities did provide some additional suggestions when asked what was missing from the web site. Comments from large utilities were more content and technically focused while medium and small utilities were more likely to be looking for tools to help them provide service to their customers.

### **7.3.5 Use of “Utility Resource Kit” Service Offerings**

The web site has helped in the past year to replace the Utility Resource Kit that previously included some of the basic Alliance support materials and has slowly been migrated to an on-line service. Prior to 2004 utilities could either get electronic files, a CD, or a binder with materials. Of the utilities that were familiar with the web resources and used the materials in the utility resource kit, 41 percent said they would refer to the web site only for updated information. Another 37 percent indicated that they would use either the website or the binder and 17 percent indicated that they would rely on their binder only. This points to the fact that while the majority of utilities are comfortable with the web site, they still see a need to be able to print out and store

important documents and materials. Download functions on the web site should be easy to use so that users can readily access materials and print them at their own location.

Table 7-5 includes a longitudinal comparison of the frequency with which utilities use the various services available through the Alliance. The usage of several services has declined, particularly the Utility Resource Kit components although the overall usage of the resource kit has increased from 42 percent in 2001 to 59 percent in 2003 up to 72 percent in 2005. The recent increase is likely due to the fact that users accessing the web site see that they are obtaining Alliance materials, and there is no longer a perception that the materials belong in a binder with the Utility Resource Kit label. Users commented that they have gone to the web site for answers to a host of questions and were able to find what they needed so see that as the “Resource.” The fact that the web site is now available means that utilities have more access points for the same information.

**Table 7-5**  
**Comparison of Alliance Service Usage over Time**

<b>Use of Alliance Project Tools</b>	<b>2002</b>	<b>2003</b>	<b>2005</b>
Used utility coordinator service	51%	87%	53%
Used field representatives services	76%	82%	74%
Read, at least in part, E-newsletter	69%	89%	70%
Read, at least in part, e-mail notices	67%	84%	77%
Received project support for promotions	23%	71%	74%
Received project support for outreach services	53%	67%	47%
Used the Utility Resource Kit	42%	59%	72%
Used cooperative marketing information	42%	52%	55%
Used incentive program design	16%	47%	33%
Used list of ENERGY STAR models	63%	71%	57%
Used Product Fact sheets	74%	76%	60%
Used POP materials	74%	62%	48%
Used advertising tools	84%	71%	50%
Used northwestenergystar.com site			66%
Participated in working groups			32%
Participated in conference calls			50%
<i>n</i>	45	45	58

Usage of the various project tools shows similar trends across utility size (Table 7-6). Note that sample sizes are small for the utility size and region subsets who used the project tools so results should be reviewed with that in mind. In general, large utilities get the most use of the services with declining participation as the utility size declines. Some of the prefabricated materials such as the product fact sheets, POP materials, and advertising tools are of relatively greater value to the smaller utilities, which use them as they are whereas with larger utilities the materials become the basis for internal utility-developed collateral.

**Table 7-6**  
**Comparison of Alliance Service Usage by Utility Size**

<b>Use of Alliance Project Tools</b>	<b>Large</b>	<b>Medium</b>	<b>Small</b>
Used utility coordinator service	80%	64%	30%
Used field representatives services	80%	84%	61%
Read, at least in part, E-newsletter	88%	72%	61%
Read, at least in part, e-mail notices	90%	92%	57%
Received project support for promotions	80%	80%	65%
Received project support for outreach services	56%	60%	30%
Used the Utility Resource Kit	90%	76%	61%
Used cooperative marketing information	33%	63%	57%
Used incentive program design	22%	37%	36%
Used list of ENERGY STAR models	56%	58%	57%
Used Product Fact sheets	67%	58%	57%
Used POP materials	78%	37%	43%
Used advertising tools	44%	42%	64%
Used northwestenergystar.com site	90%	64%	57%
Participated in working groups	56%	36%	17%
Participated in conference calls	100%	56%	22%
<i>n</i>	10	25	23

Table 7-7 includes regional utility participation differences for the key Alliance services. Utility coordinator services were used more readily in Oregon and Washington. Field representatives picked up some of that slack in Montana. Eastern Oregon and Washington had the highest use of project support for outreach services. The web site was used by at least half of all utilities across all regions. Utilities who are located in clusters or are in areas with high-focus issues such as new homes project growth areas were more likely to participate in working groups and conference calls.

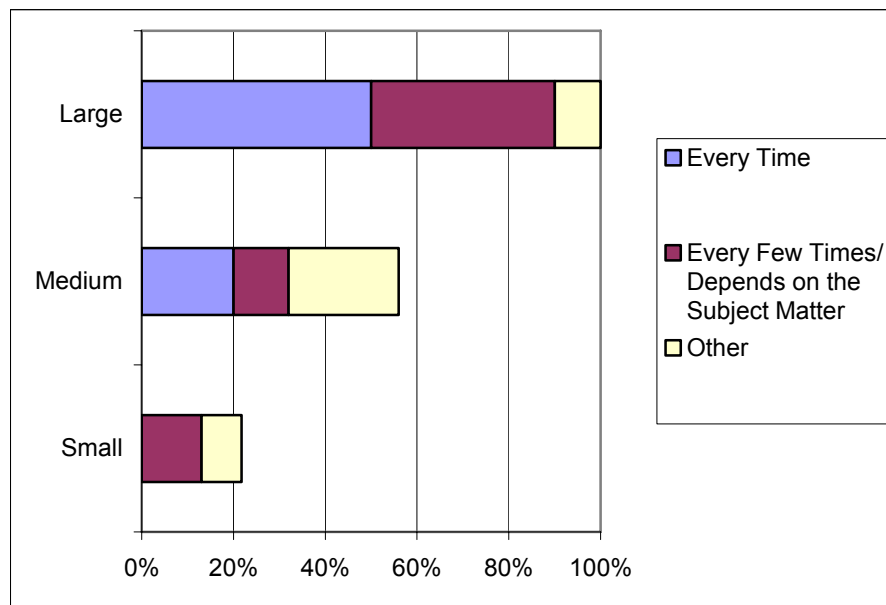
**Table 7-7**  
**Comparison of Alliance Service Usage by Region**

<b>Use of Alliance Project Tools</b>	<b>OR West</b>	<b>WA West</b>	<b>OR/WA East</b>	<b>Montana</b>	<b>Idaho</b>
Used utility coordinator service	72%	54%	64%	25%	25%
Used field representatives services	83%	69%	91%	75%	38%
Received project support for promotions	83%	77%	73%	38%	88%
Received project support for outreach services	35%	54%	73%	38%	38%
Used the Utility Resource Kit	83%	77%	73%	50%	63%
Used northwestenergystar.com site	83%	54%	73%	50%	50%
Participated in working groups	59%	46%	9%	13%	0%
Participated in conference calls	67%	46%	64%	25%	25%
<i>n</i>	18	13	11	8	8

### 7.3.6 Alliance Sponsored Conference Calls

Conference calls have become a new area of the project's focus in the last few years. All of the large utility customers regularly participate in the calls (Figure 7-25). Most of the reasons that smaller utilities with lower participation rates cited for not participating were that they either did not have time or the calls were not pertinent because they were not running any projects.

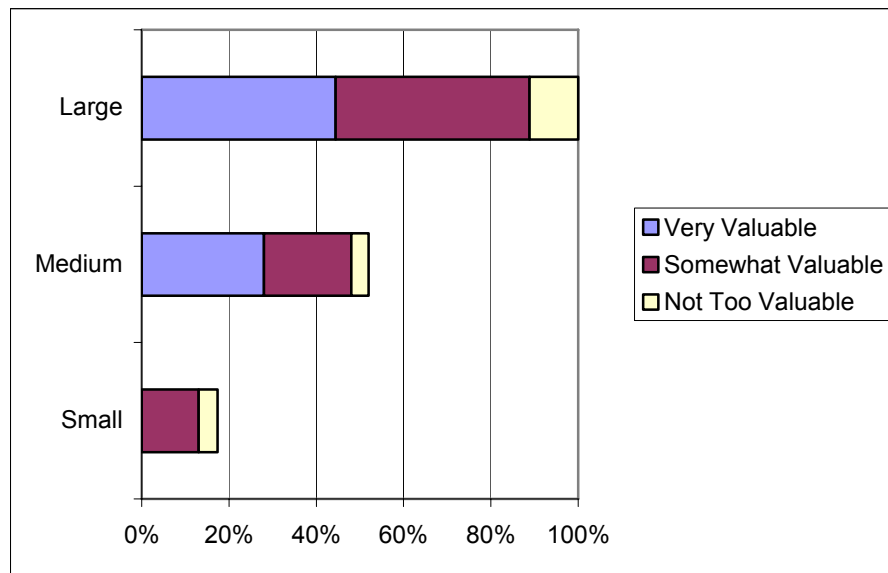
**Figure 7-25**  
**Utility Participation in Alliance Sponsored Conference Calls by Utility Size**



n=58; 10 Large, 25 Medium, 23 Small

Large utilities also find the conference calls to be most useful (Figure 7-26). Large utilities are more likely to find value in the calls because they have more projects to discuss and issues to consider around those projects. Utilities that are starting new programs reported finding good value in learning from utilities that have already gone through some of the program steps. While multiple efforts have been made to unify programs, there is still a strong sense among utilities (particularly large ones) that they want to customize their programs, messages, and approach for their service territory.

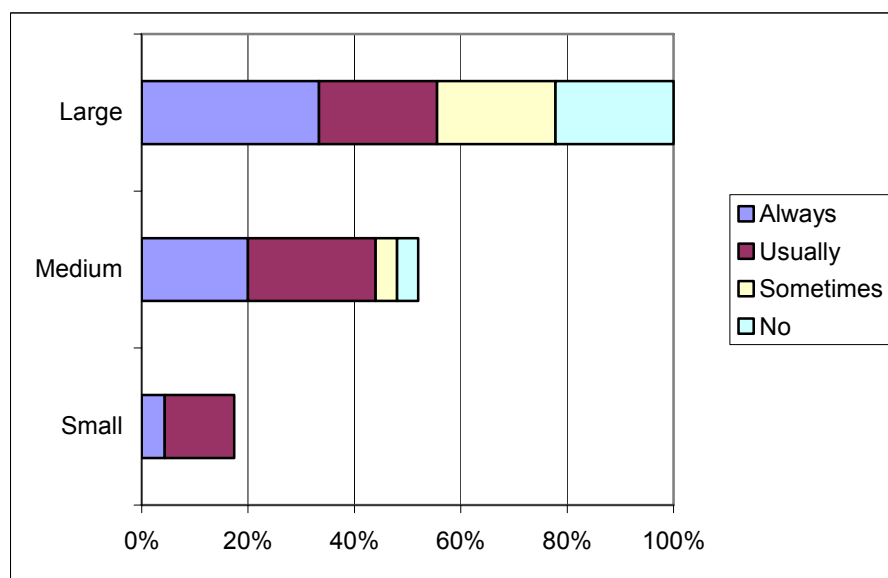
**Figure 7-26**  
**Perceived Value of Alliance Sponsored Conference Calls by Utility Size**



n=58; 10 Large, 25 Medium, 23 Small

We asked utilities if they felt that the conference calls provided them with enough information and if they were able to provide their input and feedback. Just over half of the large utilities (55 percent) report that they are either always or usually able to effectively provide input and feedback into the Alliance through the conference calls (Figure 7-27). Small utilities that participated did not register any dissent and felt that they were able to provide input.

**Figure 7-27**  
**Conference Call's Effectiveness as a Way to Provide Input and Feedback**



n=58; 10 Large, 25 Medium, 23 Small

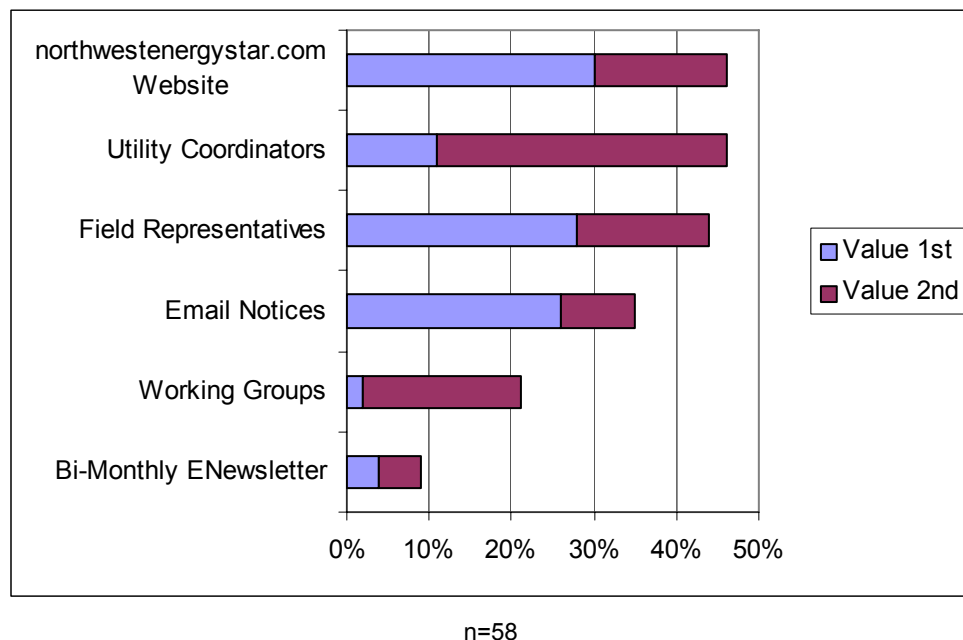
Utilities provided some general comments about the conference calls. Large utilities voiced some of their concerns about the forum as a way to provide input and feedback. As utilities get smaller, the format and content of the calls appears to be less relevant and thus they are less likely to participate.

### 7.3.7 Value Ranking of Alliance Services

Having gone through detailed questions about the various communication tools that the Alliance uses to disseminate information, utilities were asked to rank the value of the tools. Utilities provided their first and second choice responses to the question, “Of the tools you have used, which two have been the most valuable to you for the appliance and lighting projects?”

Customers value the Alliance communication tools differently depending on their own needs, number of programs on hand, and size of the utilities. Figure 7-28 shows the overall breakdown of utility first and second choices for the Alliance services that offer them the most value in support of their consumer products projects. While the northwestenergystar.com web site is relatively new, utilities see it as a highly rated communication tool.

**Figure 7-28**  
**First and Second Ranked Communication Tools**



To compare, in the 2003 report, 67 percent of utilities ranked the field representatives as their number one or two communication tool (44 percent in 2005). The second place in 2003 was the utility coordinator, with 65 percent (46 percent in 2005). The addition of the web site (46 percent

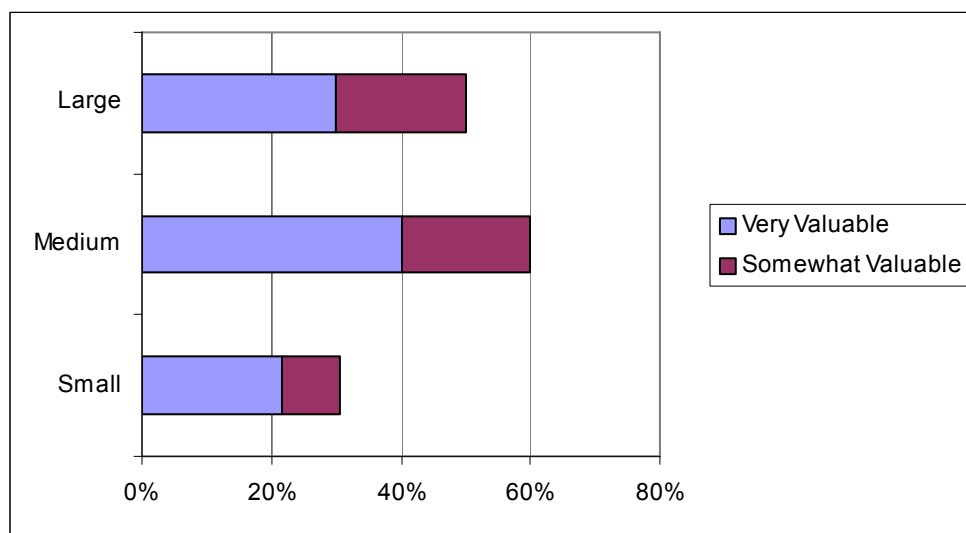
in 2005) effectively reduced the focus from the staff and shifted some of that to the self-service web site.

### 7.3.8 Marketing Services

The Alliance provides marketing services in the form of outreach efforts such as supporting home shows and attending membership meetings, regional promotion support, and do-it-yourself promotional support services. Do-it-yourself promotions are utility-initiated activities where the Alliance field representative helps staff a booth or otherwise support the specific promotional activity. In general, the largest utilities use the services but do much of their own outreach and promotion. Medium-sized utilities take the most advantage of the projects, with the exception of the do-it-yourself projects, which large utilities favor. The following three figures provide summaries of the participation levels for each of the services. Overall the utility participation rates are 47 percent for outreach efforts, 74 percent for regional promotions, and 35 percent for do-it-yourself promotions. Each figure provides the level of value that different-sized utilities receive from the outreach and promotion support.

Outreach support is most valued by the medium-sized utilities that rely on the Alliance to assist them with outreach efforts. As the utility size decreases, the proportion of users who find the service very valuable increases (Figure 7-29). Small utilities who would otherwise have no other option are most appreciative of the Alliance services with 71% of those who have used the services reporting it is very valuable. Medium utilities place slightly less relative value (67%) and larger utilities 60%.

**Figure 7-29**  
**ENERGY STAR Outreach Support Use and Value by Utility Size**



n=58; 10 Large, 25 Medium, 23 Small

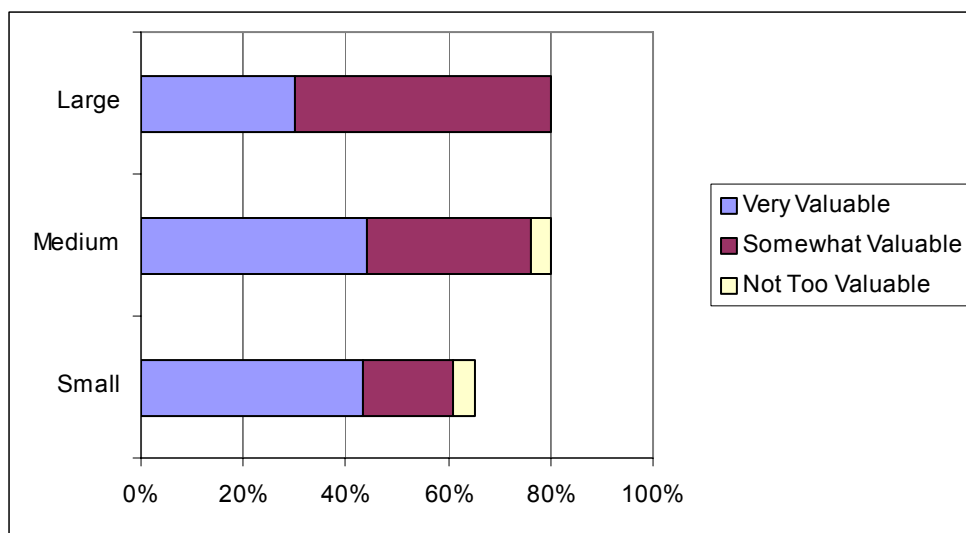
Utilities provided suggestions for ways to improve the outreach support services. Large utilities want cobranding and cooperative efforts with the Alliance, medium-sized utilities see value in



having field representatives support them, and the small utilities focus their expectations on receiving materials for their outreach efforts.

Promotional services included support for regional promotions like DYS. Promotional support services are used more by utilities of all sizes than the other marketing support service. Again, satisfaction is high with increasing percentage of very valuable responses as the utility size decreases (Figure 7-30).

**Figure 7-30**  
**ENERGY STAR Regional Promotion Support Use and Value by Utility Size**

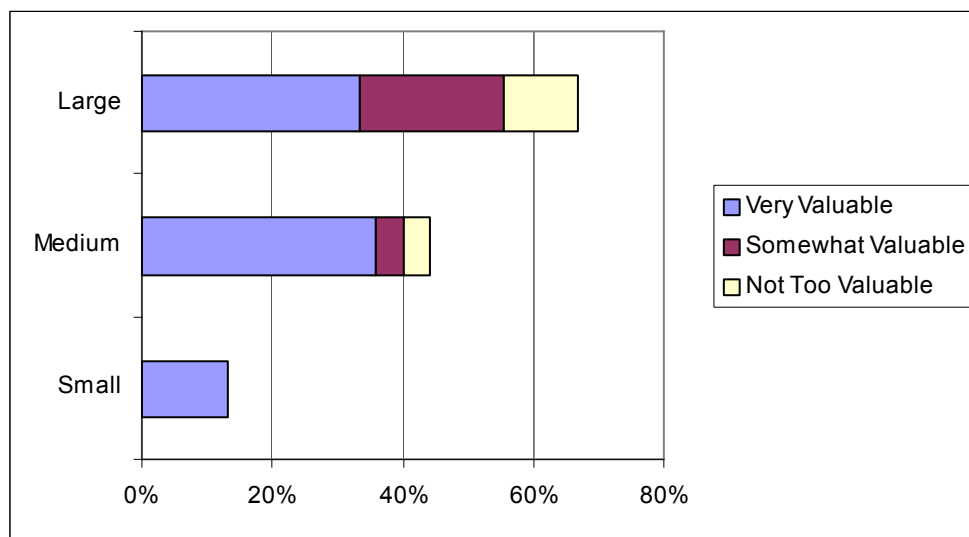


n=58; 10 Large, 25 Medium, 23 Small

The final marketing support was in the form of do-it-yourself promotions. These promotions are defined as utility-initiated efforts where a field representative or other Alliance staff person assists with the labor. Because these are more customized services geared towards the specific utility needs and involve the utility in the planning efforts, satisfaction ratings were higher than for other marketing services (Figure 7-31).

Utilities provided suggestions for ways to improve either the regional or do-it-yourself promotional support services. Many of the suggestions concerned increasing lighting promotions and conducting mass marketing to educate the public regarding energy efficient products and ENERGY STAR.

**Figure 7-31**  
**ENERGY STAR Do-it-Yourself Promotion Support Use and Value by Utility Size**



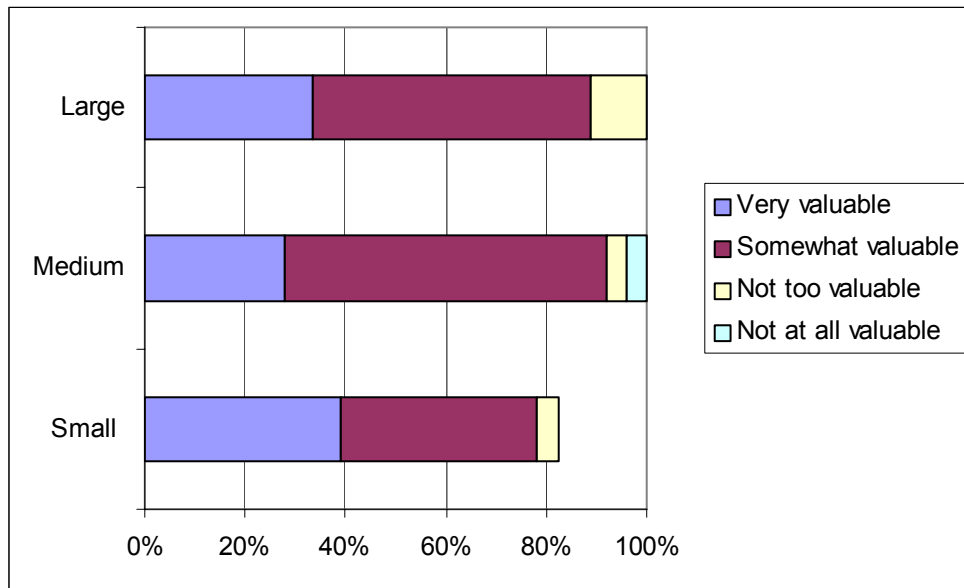
n=58; 10 Large, 25 Medium, 23 Small

### 7.3.9 Overall Alliance Offerings and Future Direction

To conclude the utility survey, utilities were asked their overall opinion on the value of the services they receive from the Alliance in terms of staff, information, outreach support, and promotional support. Overall, 86 percent of utilities value the package of services with 7 percent expressing that there was not value and the remaining 7 percent who were not applicable because they had not used the services at all. Ratings do not differ dramatically across utility sizes considering the range of participation levels and value that utilities place on individual elements (Figure 7-32). Overall valuable ratings represent 89 percent of the large utilities, 92 percent of the medium utilities, and 78 percent of the small utilities. This indicates that the service while used more heavily by larger utilities is generally meeting needs across the board.

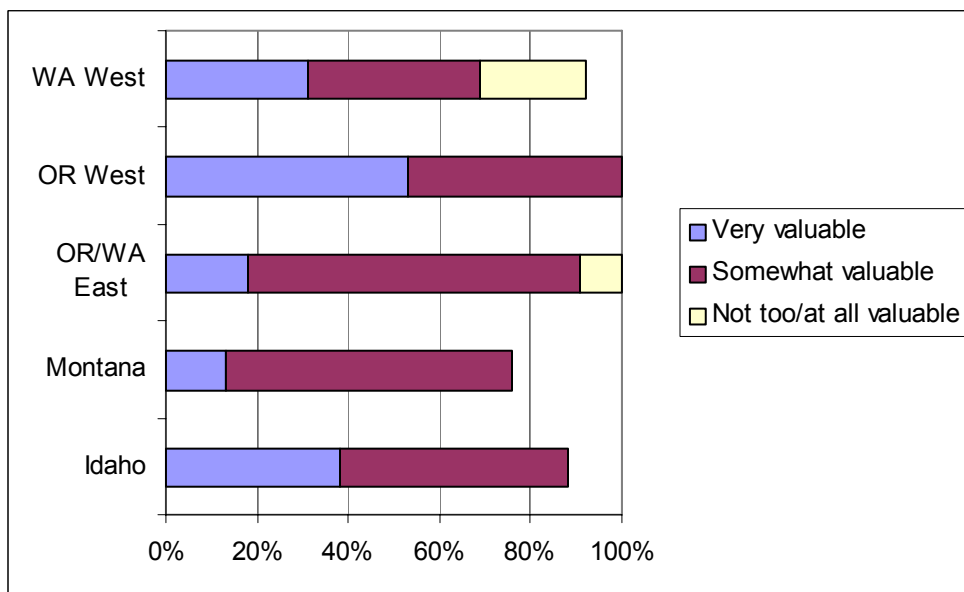
The utilities that expressed concerns with the value of the services came from either Western Washington or Eastern Washington/Oregon. Figure 7-33 illustrates the overall value results across the regions.

**Figure 7-32**  
**Overall Value that the Alliance Provides to Your Utility by Utility Size**



n=58

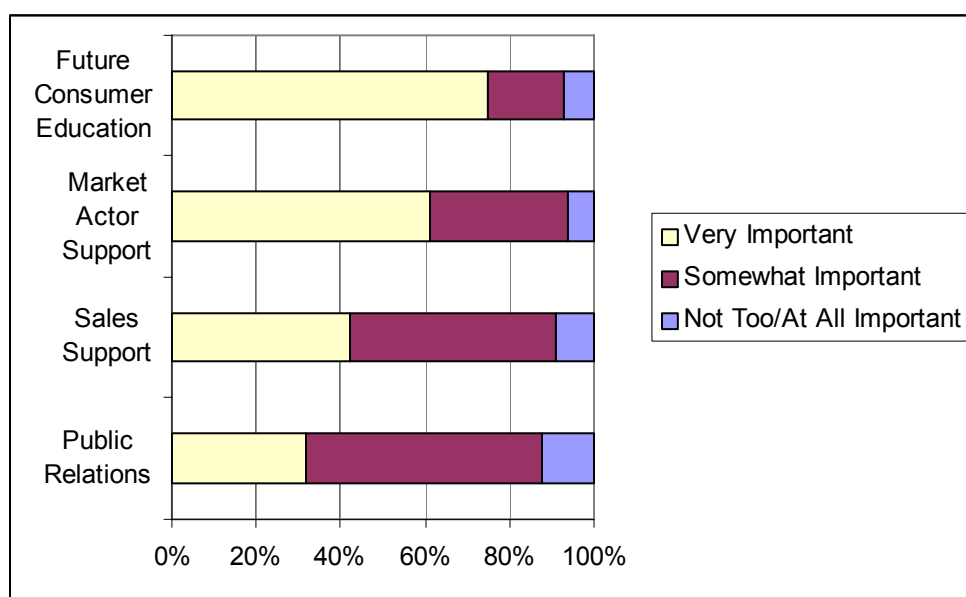
**Figure 7-33**  
**Overall Value that the Alliance Provides to Your Utility by Region**



n=58

The survey included a section asking utilities to rank various focuses that the Alliance could take in the future. Utility responses have been included in Figure 7-34. Consumer education was described, “To help educate consumers about the value of using energy-efficient products.” It gained the most support (75 percent indicated it was very important). This was followed by market actor support, “To help bring together market actors to support ENERGY STAR projects (including retailers, manufacturers, builders, and utilities).” (61 percent); sales support, “To help increase sales of ENERGY STAR home products and homes.” (42 percent); and public relations, “To help increase public relations opportunities for ENERGY STAR projects.” (32 percent).

**Figure 7-34**  
**Utility Perspectives on the Future ENERGY STAR Project Focus**



n=58

The same future questions were asked in the previous surveys and the results fall in the same order for all 3 of the study years. The 2003 top results were somewhat higher in all cases than in the 2005 study (Table 7-8).

**Table 7-8**  
**2003 and 2005 Utility Opinion Top Results**

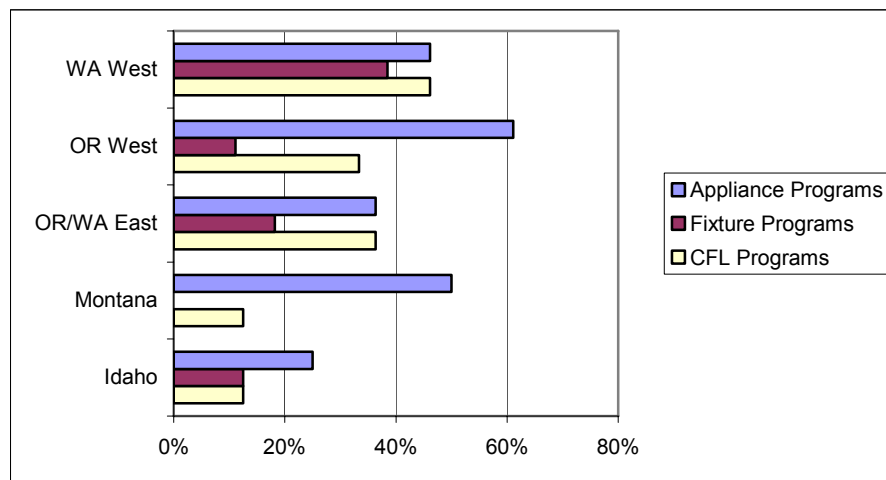
Category	2003 Top Response	2005 “Very Important”
Future Consumer Education	89%	75%
Market Actor Support	67%	61%
Sales Support	60%	42%
Public Relations	33%	32%

### 7.3.10 Utility Incentive Activity

Toward the end of the utility survey, we asked open-ended questions about the utilities goals for 2005 for both their consumer products and lighting projects. While all utilities were not able to provide incentive quantities, most were able to provide rough figures, so we analyzed the results and pulled out information on the types of programs that are being offered as well as the number of incentives where possible.

Utilities continue to offer incentive or buy-down programs for ENERGY STAR consumer products, which continue to provide consumers a means of reducing their first cost. However, utility appliance programs have slowed down in the past few years, with utilities offering the programs but not marketing the appliances heavily. As utilities await the “Post ‘06” plan from Bonneville power, many utilities are continuing to honor the programs but waiting to see what Bonneville will offer for the future. Figure 7-35 shows the number of utilities that are offering appliance, fixture, and CFL incentive or buy-down programs.

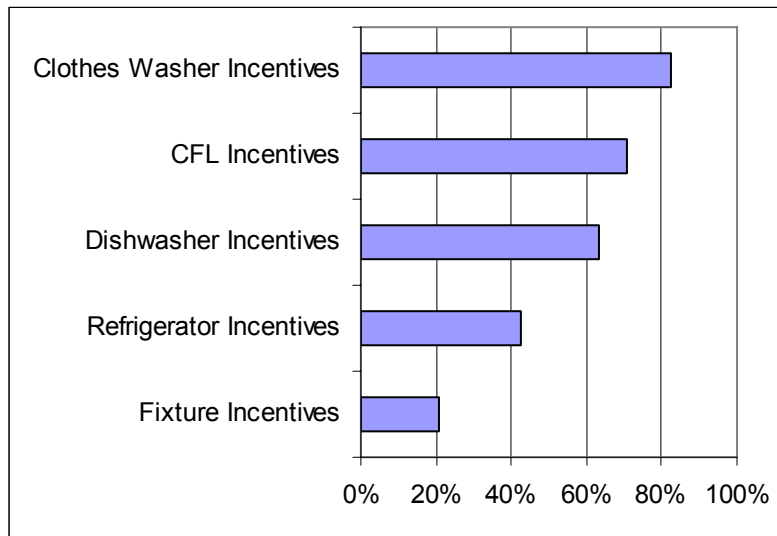
**Figure 7-35**  
**Utilities that Offer Various Incentive or Buy-Down Programs by Region**



n=58: 13 WA West, 18 OR West, 11 OR/WA East, 8 Montana, 8 Idaho

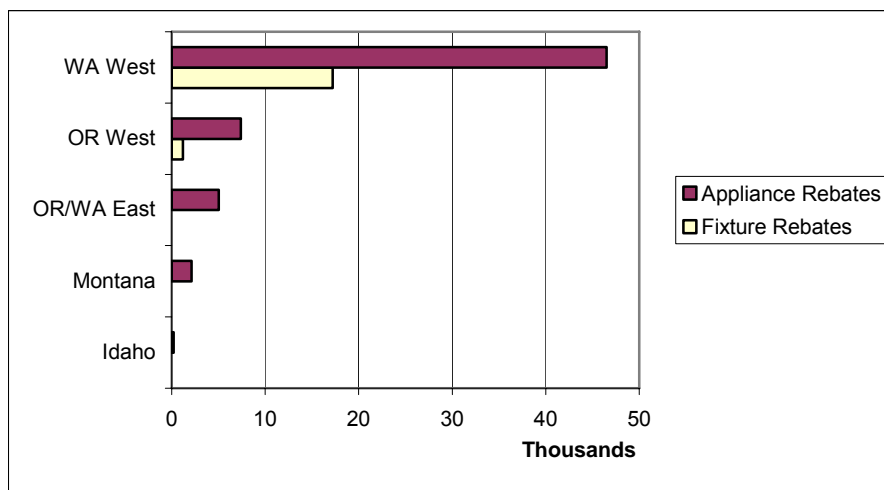
While there are less than 50 percent of all utilities that are offering programs, the programs are typically offered more frequently at larger utilities. Figure 7-36 provides a summary of the percentage of the population that is served by the various types of programs. These results use the data collected from the utility survey, which included a sample of utilities that represent 91 percent of the total Northwest customer base. While these numbers indicate high exposure to the programs, it is important to note that the number of incentives and incentive funds are often limited so while a large pool of customers could access the programs, the total quantity that could qualify and collect incentives or other incentives is much lower.

**Figure 7-36**  
**Percent of the Northwest Population Served by Efficiency Programs**



While utility programs are offered across the regions, the number of incentives or buy-downs offered provides a different view of where the incentives are occurring (Figure 7-37). All incentive data is gathered from interviews and those not interviewed are not included in the totals. Also, several of the interviewed utilities did not have total program goal counts so the total targets are conservative numbers. The total appliance incentive goal from the participants is approximately 61,200 incentives. The fixture lighting goal is approximately 18,420 units.

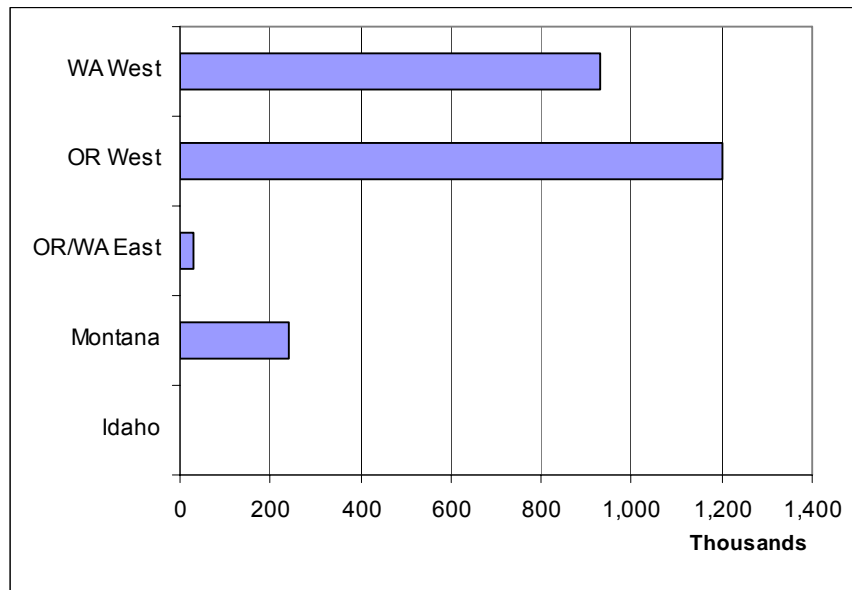
**Figure 7-37**  
**Number of 2005 Appliance and Lighting Fixture Incentive Goals by Region**



n=58: 13 WA West, 18 OR West, 11 OR/WA East, 8 Montana, 8 Idaho

The number of CFL incentive or buy-downs offered by Northwest utilities are projected at just over 2.4 million for 2005. The incentives are centered in the western Washington and Oregon regions (Figure 7-38). Again, incentive projections are only for those participants who were surveyed and able to provide the information so numbers are conservative. The four utilities or organizations that are the most active account for 95 percent of the CFL incentive or buy downs. These include the Oregon Energy Trust, Puget Sound Energy, Snohomish City PUD, and Northwestern Energy.

**Figure 7-38**  
**Number of 2005 CFL Incentive or Buy Down Goals by Region**



n=58: 13 WA West, 18 OR West, 11 OR/WA East, 8 Montana, 8 Idaho

This section describes the cost-effectiveness assessment. The Alliance's ENERGY STAR lighting and ultra-high efficiency clothes washer cost-effectiveness models were reviewed and inputs to the models were evaluated.

## **8.1 ENERGY STAR LIGHTING MODEL**

This section describes an assessment of the Alliance's ENERGY STAR lighting cost-effectiveness model. The scope of the assessment was to develop a working understanding of the model itself and the inputs to the model. Key inputs were evaluated by comparing them to results from recent residential lighting studies for the region (where available) and comparable regions. One recent relevant study that formed the backbone of this assessment was the 2004 CFL Metering Study, which included monitoring of over 900 CFLs at nearly 400 homes across the state of California. A detailed on-site lighting inventory was captured at each residence as well.

In summary, we found that the model approach and most of the key inputs were reasonable. One input that may warrant attention is the measure cost assumption, which is lower than what has been recently observed on retailer shelves in the region.

Likewise, the model's assumptions regarding market acceptance may benefit from a more in-depth assessment. Presently, the model uses a somewhat simplistic approach to determine baseline units, then subtracts out utility rebates, and assigns the remaining CFL sales to the Alliance's project. The approach may be overstating the project's market effects. Local utility projects may be causing spillover market effects. Likewise, residential lighting programs across the nation (and at the national level) are working to affect CFL suppliers through incentives and other support, affecting supply and product pricing. These broad, cumulative effects may especially be important in the future in increasing the levels of "baseline" sales that the model presently assumes will grow at a very modest rate.

Finally, forecasts of CFL sales may be ambitious given the current project design. There may be a limit reached among current CFL purchasers in the near-term that would impact future project sales goals. However, the Alliance's project as well as local utilities may in the future work to expand the CFL purchaser base, making reaching future sales goals more likely.

The remainder of this document is organized by category of model inputs. Each input is defined and then the results of the assessment are discussed. Electricity savings are discussed first, followed by measure life, measure cost, annual operation and maintenance (O&M) costs, market acceptance and project costs.



### 8.1.1 Electricity Savings

#### **Inputs**

There are nine inputs to the electricity savings calculations:

- percentage of CFLs installed in interior fixtures
- percentage of CFLs installed in exterior fixtures
- interior hours on per day
- exterior hours on per day
- watt reduction
- one year installation rate
- interior take-back
- exterior take-back
- space heat interaction (applies to interior bulbs only)

#### **Percentage of CFLs installed in interior fixtures**

The model currently assumes that 70 percent of CFLs are installed in interior fixtures, based on NWPCC data. This assumption is supported by the 2004 CFL Metering Study, which concluded that 77 percent of all CFLs are installed in interior fixtures. The 70 percent value is close to the upper bounds of the statistical margin of error surrounding the recent California study.

#### **Percentage of CFLs installed in exterior fixtures**

The logic discussed for interior fixtures applies to exterior fixtures as well. In the CFL Metering Study, 23 percent of CFLs were found to be installed in exterior fixtures, versus the model's assumption of 30 percent.

#### **Interior hours on per day**

The model assumes 2.4 hours of operation per day for interior fixtures. This assumption is supported by the CFL Metering Study, which estimated that interior CFLs are used on average 2.3 hours per day. The Northwest is similar to California in that it has experienced a significant degree of market acceptance of CFLs (e.g., market shares approaching 10 percent and nearly 10 years of market interventions by utilities and the Alliance) that has led to relatively high saturations of CFLs within households that have tried them. Therefore it is reasonable to assume that current usage patterns across the two regions are similar.

#### **Exterior hours on per day**

The model is assuming 3.4 hours per day for exterior CFLs. The source of this value is analysis that was conducted using 1996 Tacoma Power Utilities hours of use data combined with more recent consumer survey data. These data and methods are used industry-wide and the results are consistent with other recent analyses in other regions.

**Watt reduction**

The model is assuming a wattage reduction of 52 watts based on data from an evaluation of the 2002 California Statewide lighting program. This value is supported by the CFL Metering Study, which found average wattage reduction to be 49 watts based on self-reported respondent data.

**One year installation rate**

The model assumes a one-year installation rate of 80 percent. The lighting purchaser study conducted in support of the Alliance's consumer products project suggests a 76 percent installation rate, but for all the bulbs the consumer has purchased over time. (90 percent of CFL purchasers have made their CFL purchases within the last 5 years, based on the same survey.) So we can assume that the one-year installation rate is higher than 76 percent, since bulbs purchased over a five year period may be removed over time due to burnout, etc.

Other studies of installation rates using consumer self-reports<sup>23</sup> suggest a range of installation rates from 66 percent to 90 percent. The 90 percent value reflects slightly less than one year, while the 66 percent value covers two and a half years.

Thus, the 80 percent assumption is reasonable, since it falls within the range of values from recent lighting evaluations in the Northwest and other regions.

**Take-back**

The model assumes 5 percent interior and 20 percent exterior take-back, which reflect increased hours of operation or wattage after installation of CFLs. A recent CFL impact evaluation conducted for a utility in the Northwest suggests that take-back is the same for interior and exterior CFLs, and is on the order of 5 percent or less. The Alliance may consider reviewing its assumptions with regard to the higher exterior take-back value.

**Space heat interaction (applies to interior bulbs only)**

The model assumes 14.3 percent net space heating/cooling interaction. Assessment of this parameter was beyond the scope of the evaluation.

***Calculated energy savings***

The calculated energy savings is reasonable given that the most important inputs have been validated by other recent residential lighting studies.

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<sup>23</sup> 2004 California CFL Metering Study and the 2001 California Residential Lighting and Appliance Program evaluation.

### **8.1.2 Measure Life**

#### ***Inputs***

##### **Measure life (hours)**

CFLs are assumed to last 6,000 hours, according to the model. ENERGY STAR rates CFLs at 8,000 hours and manufacturers rate them up to 10,000 hours.

##### **Hours of use per day**

The model uses the weighted average of the interior and exterior hours of usage, which is 2.7. We discussed the interior and exterior hours of use assumptions along with the mix of interior and exterior CFLs above.

#### ***Calculated Measure Life***

The model assumes a measure life of 7 years. It appears there may be a calculation error, since 6000 hours divided by 2.7 hours per day is 2,222 days or just over 6 years.

Another method for evaluating measure life is to measure retention of CFLs. Retention studies have been conducted in California, the Northeast and other regions that have measured the typical measure life, taking into account burnout, installation rates, customers moving, etc. These studies are conducted at increasing intervals, e.g., 1 year, 6 year and 8 year. The estimate of measure life for CFLs from the last round of California retention studies is around 8 years. The Alliance should consider reviewing its measure life assumption in light of the California evaluation results and the ENERGY STAR lifetime hours ratings.

### **8.1.3 Measure Cost**

Measure cost is assumed by the model to be \$3 from 2005 on. The model uses a value of \$5 for years up to year 2004, based on prior Alliance residential lighting project evaluations, which included consumer self-reported telephone survey data on retail price per CFL. The last lighting evaluation recommended that the Alliance continue to use \$5 per bulb until subsequent evaluations proved that the price had gone down significantly.

The shelf survey data collected as part of this project evaluation suggest that retail price per bulb is at least \$5 in the spring. (On average and across all models, CFLs were found to cost about \$8. Some small twister type bulbs were priced as low as \$2 at specific retailers. On average, twister bulbs— accounting for nearly half of all models stocked across stores – were priced at about \$6 each.) The next round of shelf surveys may be conducted during the fall lighting season when CFL sales are at their highest and bulbs are likely to be discounted by utilities, retailers and manufacturers due to fall promotions including ENERGY STAR's Change a Light. These results can be combined with the non-promotion period inventory data to come up with a sales-weighted measure cost estimate that may be used to validate or update the model's current assumptions. The Alliance should work with their implementation contractor to ensure that lighting sales data

are collected at the most disaggregated level possible to maximize the ability to apply sales weights to the measure cost data collected in support of MPER2.

#### **8.1.4 Annual O&M Costs**

O&M costs are assumed as the avoided costs associated with purchasing incandescent bulbs in place of CFLs.

##### ***Inputs***

##### **CFL bulb life (hours)**

CFL bulb life is assumed to be 6,000 hours, as discussed above.

##### **Incandescent bulb life (hours)**

Incandescent bulb life is assumed to be 750 hours by the model. This value is a fairly common assumption used in CFL cost-effectiveness models industry-wide.

##### **Incandescent bulb cost**

Incandescent bulbs are assumed to cost 50 cents each by the model. Incandescent bulbs may cost upwards of 75 cents, based on an informal review of incandescent bulb cost assumptions used in various CFL cost savings calculators nationwide.

##### ***Calculated O&M Costs***

Based on the inputs above, it is assumed that over the life of a CFL, 8 incandescent bulbs do not need to be purchased. At 50 cents each, a total of \$4.00 in O&M costs does not need to be spent. Assuming that incandescent bulbs cost 50 percent more than assumed, O&M costs may be understated by 50 percent.

#### **8.1.5 Market Acceptance**

##### ***Inputs – Total Market***

- number of sockets in 1997
- number of sockets in 2004
- socket growth per year
- participating New Homes by 2015
- percentage of sockets that are CFL applicable
- percentage of CFLs sold that are ENERGY STAR qualified
- CFL sales through 2004
- annual CFL sales growth for 2005 and on

**Number of sockets in 1997**

The model assumes that in 1997 the number of total sockets in the region was under 140 million, using “best available data”. We did not assess the validity of this parameter.

**Number of sockets in 2004**

The model assumes that in 2004 the number of total sockets in the region was 150 million, using “best available data”. We did not assess the validity of this parameter.

**Socket growth per year**

The model assumes that socket growth will be 1.1 percent per year from 2004 on. This assumption is reasonable, given that socket growth from 1997 to 2004 was about 1.1 percent.

**Participating New Homes by 2015**

New homes participating in the ENERGY STAR Homes project are assumed to be insignificant until 2015 when they are assumed to total about 1 million. Interviews with utilities conducted to support this project evaluation touched on the New Homes project and suggest that even by 2015 participation of 1 million homes may be overly ambitious. The New Homes project evaluation may be better able to support the 2015 participation estimate.

**Percentage of sockets that are CFL applicable**

The model implicitly assumes that 100 percent of sockets are CFL applicable. The CFL Metering Study estimated that 86 percent of sockets in homes could technically be fitted with CFLs (i.e., there exists a model on the market, not necessarily widely available or at reasonable cost). Of course in the future this percentage will likely increase as manufacturers expand their product offerings. But even then, CFL applicability may reach a limit that is lower than 100 percent.

**Percentage of CFLs sold that are ENERGY STAR qualified**

The model includes CFL sales of ENERGY STAR bulbs, excluding sales of non-ENERGY STAR CFLs. The recent evaluation showed that around 90 percent of bulbs on retailers’ shelves are ENERGY STAR labeled.

**Annual CFL sales through 2004**

Annual sales through 2004 are taken from the Alliance’s tracking database. These estimates have been found by the current and prior evaluations to be understated by about 10 percent.

**Annual CFL sales 2005 and on**

The model assumptions for growth in CFL sales are based on the Alliance’s project goals of growth in sales of 750,000 CFLs per year. The evaluation results suggest that current purchasers are highly satisfied with CFLs and plan to keep purchasing them. However, due to their long life, the sale of multi-packs, and the relatively high CFL storage rate among purchasers, it is uncertain given current project and market conditions that CFL sales increases will continue at their

current pace in the long term. Barriers to expanding the CFL purchaser base will need to be addressed over time in order to meet the aggressive CFL sales goals.

### **Total Market Input Summary**

Total sockets available to be fitted with CFLs may be overstated. However, it is not clear how this input fits into the cost-effectiveness model, which is based on CFL sales.

Total CFL sales may be understated in the short-term but perhaps over-stated in the long-term due to barriers to expanding the CFL purchaser base. Future Alliance and utility programs may help to address those barriers, as may programs in other regions and maturation of the CFL supplier market.

### ***Inputs – Baseline and Utility Units***

The model assumes that a certain mix of baseline units and utility-rebated units comprise a fraction of the market, and the remainder of the market is credited to the Alliance's project. The assumptions used to generate estimates of baseline and utility units do not address the question of spillover due to Northwest utility rebate programs nor spillover due national and utility programs in other regions of the nation.

#### **Baseline Units**

The model assumes a certain number of baseline units, based on an assessment of CFL sales across the nation. Growth in baseline sales is estimated at 1 percent per year. The assumption of 1 percent growth in baseline sales may be too conservative given the level of national and other regional activities that will likely impact supplier and consumer activity in the Northwest in the future, whether the Alliance and local utilities ran programs or not.

#### **Utility Units**

Utility units are equal to the number of rebates paid. From 2001 to 2004, rebates were tracked by the Alliance. From 2005 on, rebates are assumed to be 1 million per year. Assuming 0 percent spillover onto the market due to utility rebates may be too conservative given the evidence from evaluations of programs in other regions<sup>24</sup> that have measured a significant amount of spillover associated with incentive programs. However, it is true that the Alliance's project interacts with the utilities and so should get some credit from spillover – but perhaps less than 100 percent.

### ***Calculated Market Acceptance***

Calculated market acceptance may be overstated due to the concerns discussed above relating to baseline and utility sales.

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<sup>24</sup> Residential lighting program evaluations for the Long Island Power Authority, Energy Efficiency Vermont, and the California investor-owned utilities conducted by KEMA in the late 1990s through 2005.

### 8.1.6 Project Costs

Project costs were not assessed as part of this analysis.

## 8.2 ULTRA-HIGH EFFICIENCY CLOTHES WASHER MODEL

This section describes an assessment of the Alliance's ultra-high efficiency (UHE) clothes washer cost-effectiveness model. The model relies on data from the Northwest Power and Conservation Council (NWPCC), the Federal Register and the Regional Technical Forum (RTF). The scope of the assessment was to develop a working understanding of the model itself and the inputs to the model. Key inputs were evaluated by comparing them to results from recent clothes washer studies for the region (where available) and comparable regions as well as KEMA's residential audit software database<sup>25</sup>.

In summary, we found that the per load savings and costs assumptions are in line with industry-reported values. However, the total number of loads assumed to be washed on a per household basis may be overstated.

Regarding the market acceptance, forecasts of baseline sales of UHE clothes washers may be conservative, leading to an overstated level of future savings attributed to the project.

Finally, the incremental measure cost assumption may be too low at only \$80, with industry accepted estimates of incremental cost over \$500.

The remainder of this document is organized by category of model inputs. Each input is defined and then the results of the assessment are discussed. Electricity savings are discussed first, followed by measure life, measure cost, non-electric benefits and annual operation and maintenance (O&M) costs, market acceptance and project costs.

### 8.2.1 Electricity Savings

#### *Inputs*

There are three inputs that are used to calculate UHE clothes washer electricity savings:

- Number of wash load-cycles/year
- Average Modified Energy Factor (MEF)
- Electricity savings per wash load

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<sup>25</sup> Based on mail-in audits of hundreds of thousands of residential customers of California investor-owned utilities, Hydro Quebec, Ontario Hydro and other utilities across the US including Seattle City Light, Kauai Electric, and Florida Light and Power.

**Number of washer load cycles per year per family**

The model assumes the average home to operate 352 wash cycles per year, based on data developed by the NWPCC.

Recent Residential Appliance Saturation (RASS) data for Portland General Electric (PGE) and the state of California's investor-owned utilities suggest that this input may be too high and should be revised or at least revisited. The 2002 PGE RASS estimated that on average households washed a total of 4.5 loads per week, for a total of 234 loads per year per household. The 2003 California RASS estimated 5.7 loads per week, or 296 loads per year per household. A third source, KEMA's residential audit software database, suggests an average of 2.2 wash loads per person per week. The 2002 PGE RASS estimates there are 2.4 people per home, suggesting 5.3 loads per week per household or 275 loads.

**Modified Energy Factor (MEF)**

For UHE clothes washer the MEF, by definition, is 1.8 or higher. Since the current highest MEF available is 2.2, the model calculates a weighted mid-point MEF of 1.9. Based on purchase data from the recent spring appliance promotion in the Northwest (summarized in Section 4 of this evaluation report), 74 percent of UHE clothes washers were between 1.8 and 1.99 MEF. 23 percent were between 2.0 and 2.19, and 2 percent were 2.2. These data support the usage of 1.9 or greater for the weighted average MEF for UHE clothes washers.

**Electricity Savings Per Load**

The electricity savings associated with an average MEF of 1.9 is based on the relationship between energy savings and MEF. The Federal Register and the RTF have developed a best-fit linear model of energy savings as a function of MEF. This relationship and the criteria for a clothes washer to meet various MEF levels is very well-documented and has been rigorously tested, as outlined in the Federal Register.

Likewise, the electricity savings associated with each level of MEF clothes washer has been rigorously tested and is well documented in the Federal Register. The electric savings assumptions of 0.43 kWh per wash load align with KEMA's residential audit software database that includes high efficiency clothes washer savings recommendations based on customer surveys and utility billing analyses. Likewise, the values are within the established range of Unit Energy Consumption values of clothes washers published by numerous utility-sponsored studies nationwide.

***Calculated annual electricity savings***

Calculated annual savings of 151 kWh may be overstated since the total number of loads that the electricity savings value is applied to may be overstated.



### **8.2.2 Measure Life**

Clothes washer life is 14.1 years (from the Federal Register and RTF). We did not evaluate this assumption.

### **8.2.3 Measure Cost**

Measure cost data were calculated based on NWPCC cost data combined with the assumed distribution of UHE clothes washers by MEF. Models with MEF=1 cost \$500 on average, while the highest MEF models (2.2) costs \$700. Incremental measure cost is assumed to be \$80.18.

This value appears to be lower than other industry estimates of incremental cost for this measure. According to the 2004-2005 Database for Energy Efficiency Resources (DEER), incremental cost for UHE clothes washers (that are assumed to replace clothes washers with MEF=1.04) ranges from \$581 to \$765, depending on the size of the unit.<sup>26</sup> However, this estimate is likely the upper bound for incremental cost, since the methodology did not explicitly net out feature parity. That is, since high efficiency clothes washers are typically loaded with other high-end features, it is difficult to compare this class of washers directly with baseline washers, which tend to have less high-end features.

### **8.2.4 Non-Electric Benefits and Annual O&M Costs**

There are several non-electric benefits associated with UHE clothes washers. We describe the inputs below, on a per wash load basis. Above we have described our concerns regarding the number of loads per year assumption, with which the per load savings are combined to yield annual savings.

- Water savings
- Sewer savings
- Detergent cost
- Detergent savings

#### ***Water savings***

As described in the electricity savings discussion, water savings was estimated from data developed by the RTF. Savings assumptions are from Federal Standard 1 for 2004 to 2006 and from Federal Standard 2 for 2007 to 2010, and sum to 15.5 gallons per load. These assumptions have been thoroughly tested and well documented, and align with water savings estimates used by KEMA's residential audit software.

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<sup>26</sup> \$765 incremental cost for units that are 1.5 cubic feet (cf); \$581 for 2.65 cf and \$761 for 3.5 cf units (2004-2005 DEER – see <http://eega.cpuc.ca.gov/deer>.)

***Water and Sewer cost savings***

The model assumes water and sewer savings of \$4.11 per 1000 gallons and is derived from residential sewer costs per 1,000 gallons for the cities of Portland, Seattle and Spokane. This value is combined with the water savings assumptions (in gallons) to generate an estimate of water and sewer cost savings equal to 6 cents per load. We did not evaluate the water cost per gallon assumption, however, the methods used to generate the assumption appear to be reasonable.

***Detergent cost per wash load cycle***

The detergent cost per wash load of \$0.20/load (for standard clothes washers) is referenced from the RTF. We did not evaluate this assumption.

***Detergent savings***

Detergent savings is calculated based on 25 percent savings of total detergent cost per load, and is equal to 5 cents per load. This assumption is reasonable, given that UHE washers use a fraction of the water as compared to standard clothes washers, so that only a fraction of the detergent is required. While not all end users will necessarily use less, 25 percent savings is still a conservative estimate.

**8.2.5 Market Acceptance**

Market acceptance assumptions include total, baseline and utility markets, resulting in calculated market acceptance.

***Inputs – Total Market***

- total regional sales
- rate of growth in total regional sales

***Total regional sales***

The model assumes total sales for the region in 1997 at 289,000 units and 355,700 for 2003, based on American Home Appliance Manufacturers association. This source is used industry-wide for estimating sales of appliances.

***Rate of growth in total regional sales***

The model assumes that growth in clothes washer sales will be the same as the growth in population for the region, 2 percent. This is a reasonable assumption.

***Inputs – Baseline and Utility Units***

The model assumes that a certain mix of baseline units and utility-rebated units comprise a fraction of the market, and the remainder of the market is credited to the Alliance's project. The

assumptions used to generate estimates of baseline and utility units do not address the question of spillover due to Northwest utility rebate programs nor spillover due national and other utility programs in other regions of the nation.

### **Baseline Units**

The model assumes a set percentage of baseline units – around 3 percent of total units sold. These units represent the number of UHE units (MEF=1.8) that would be sold in the Northwest in absence of any project intervention. The Alliance has supported the 2007 federal standard of MEF of 1.26, which was the original ENERGY STAR specification, and an improved ENERGY STAR specification of MEF of 1.8. Assuming the 2007 ENERGY STAR specification is increased, it follows that sales of UHE clothes washers will naturally increase as manufacturers upgrade the efficiency of their product lines. Therefore, baseline sales of UHE clothes washers will likely exceed 3 percent of total units after 2007. However, the Alliance's project may take credit for the standards change and likewise some percentage of the increase in UHE clothes washer shares associated with the change. But the natural baseline sales may still be understated at 3 percent of total units sold after 2007.

### **Utility Units**

There are no utility units in the analysis, since utility rebates are based on ENERGY STAR qualification. Utility units are counted in the ENERGY STAR clothes washer cost-effectiveness model.

### ***Calculated Market Acceptance***

Calculated market acceptance is the UHE clothes washer sales in the region that may be claimed by the Alliance. This value is equal to the total market net of local utility and baseline sales. As described above, baseline sales are assumed to be 3 percent through 2025 and utility sales are zero since they are counted in the ENERGY STAR clothes washer cost-effectiveness model. Thus, calculated market acceptance is equal to 97 percent of total sales.

Due to concerns discussed above with regard to the inputs to calculated market acceptance, this value may be overstated.

### **8.2.6 Project Costs**

Project costs were not assessed as part of this analysis.

This section presents study conclusions and recommendations. First, we present a summary of how the study findings link to the project's market project indicators. We then provide a high-level discussion of the main study conclusions, organized by the main sections of the report (Sections 4 through 8) and by technology. Finally, we provide some recommendations for consideration by the Alliance, which may help shape project strategies and goals in the future.

## **9.1 LIGHTING PRODUCT CONCLUSIONS**

### ***9.1.1 Progress Towards Meeting Market Progress Indicators***

- **Increase CFL sales in the Northwest from 750,000 to 1 million annually from the 2003 level of 3.8 million, reaching total sales of 9 million per year by 2010.** The project has exceeded its 2004 sales goal of 4.8 million CFLs by a wide margin, with over 5 million in CFL sales. Although sales have been strong, consumer survey results suggest the Alliance and regional stakeholders will need to focus on expanding the purchaser base if they hope to continue increasing sales at the rate of 1 million CFLs per year. In order to do so, the Alliance must better understand and address key purchase barriers, including awareness, first cost and lack of information.
- **Increase the rate consumers replace expired CFLs with new CFLs from 30 to 80 percent by 2010.** This evaluation concludes that the Alliance should change this progress indicator to one that better reflects repeat purchase behavior. Currently, CFL removal rates are very low (3% percent of bulbs installed). The reasons for removals suggest that the majority is due to dissatisfaction with the CFLs, so low CFL replacements are not a surprising finding and more importantly, are not an area for the project to track and to focus its market interventions. However, the rate of removals is worthy of tracking, since it reflects dissatisfaction among current CFL users. We believe that future intentions of replacing burnt-out CFLs with CFLs are a more appropriate indicator of replacement rate, and that the Alliance should track this metric over time. Currently, 75% of CFL purchasers report that they are likely to replace burnt out CFLs with CFLs. We recommend that the Alliance set a goal of 80% replacement rate using this metric.
- **Increase availability, selection, and affordability of lighting products in the region.** CFL availability, selection and affordability have all improved over the last 5 years. Although dimmable and specialty CFLs are now available, the cheapest and most commonly stocked bulb is the small twister style CFL. The other style bulbs and most higher wattage, specialty and dimmable bulbs are not widely available and are very expensive. Availability of non-twister style bulbs differs significantly by state, with Oregon maintaining the most diversity of bulbs, followed by Washington, Montana and then Idaho. Although it was infrequently mentioned as a key purchase barrier in this year's consumer survey, availability/ selection has been cited as a

prominent purchase barrier in past surveys and is still an important consideration for continued market growth.

### 9.1.2 CFL Product Sales and Market Share Assessment

#### Methods

- **The internal project tracking mechanism is reliable yet produces conservative estimates.** The Alliance's project contractor utilizes its knowledge of the Northwest lighting market and the relationships it has built with regional suppliers to collect CFL sales data and estimate total sales for the region. The resulting estimates are on the conservative side, but understating total sales by an estimated 10 percent.
- **Consumer self-reported purchase data are unreliable.** However, these data may be useful in tracking changes in sales over time.

#### Results

- **As mentioned above, the project has exceeded its goal for 2004 sales of 4.8 million CFLs by a wide margin, with over 5 million in CFL sales.** Consumer results suggest there may be a limit on the extent that sales will continue to increase, unless the Alliance and/or utilities and other regional stakeholders address the barriers to expanding the purchaser base (awareness, first cost and lack of information).

### 9.1.3 Lighting Survey Results

#### Consumer Survey

The consumer survey focused on recent CFL purchasers to identify their motivations, satisfaction levels, future purchase intentions, and CFL removal behaviors.

- **Awareness is the barrier that affects the most residents with regards to increasing CFL purchases.** Two-thirds of consumers in the Northwest are aware of CFLs, while the remaining 32 percent are unaware. Awareness rates are lower in Montana and Idaho. Survey results showed that the Alliance's support of retailers throughout the territory as well as local energy-efficiency programs (i.e., in high-publicity areas) are effective in raising awareness of CFLs among consumers. While this finding may suggest that the Alliance should address the awareness barrier first since it affects the largest proportion of the population, this segment of the population is likely to face other barriers to purchase after they are made aware. In fact, this segment may be more likely to face barriers to purchase than the rest of the population that is already aware, since they are less educated and less likely to have been exposed to CFLs and messages about the benefits of CFLs.
- **After lack of awareness, first cost and lack of information are the next most important barriers to convincing nonpurchasers to buy CFLs.** Compared with CFL purchasers, nonpurchasers are less likely to have received a coupon in the mail, own their home, or have a college education. Furthermore, the major reasons

consumers in the Northwest purchase CFLs are to save energy and reduce their electricity bill. Taken together, these results suggest that the most effective methods to encourage consumers to purchase and continue purchasing CFLs are to help offset the upfront cost and convince them a lower electricity bill and other benefits of saving energy are worth the higher cost. Note that, like awareness rates, purchase rates are lower in Montana and Idaho.

- **Satisfaction with CFLs among current users is presently high in the region, and concern about CFL performance is not a significant barrier facing nonpurchasers.** As such, CFL quality is a relatively small barrier to future purchases as compared to awareness and first cost/lack of information. Note that satisfaction with bulb brightness is a key driver of overall satisfaction and of future purchase intentions, as described in Section 5.
- **The ENERGY STAR label has limited influence on CFL purchasers.** Only a third of purchasers noticed the ENERGY STAR label on the bulbs they purchased and, of those, less than half found it to be very influential. These results are consistent with other consumer survey data that show that energy and cost savings potential of CFLs are what drives CFL purchases. Shelf survey data show that the vast majority of CFLs on retailers' shelves have the ENERGY STAR label, so we can assume that most CFL purchases are ENERGY STAR CFL purchases. The impact of the label on the market may be occurring at the retail and manufacturer level.

### ***Lighting Shelf Survey***

The lighting retailer shelf survey was implemented with the intent to characterize the stock of CFLs currently available to the region's consumers in terms of applications, features, wattage ranges, ENERGY STAR qualification, and price. The information gathered allows for tracking of CFL availability, diversity, and price over time. These data represent retailers' stocking patterns and may not be representative of what is purchased. In order to use these data to understand what is being purchased (i.e., in terms of the average price paid by consumers or the most typical model selected by consumers, etc.), sales weights would need to be developed and applied.

- **One-quarter of all the bulb shelf space (among stores that sell CFLs in the region) is allocated to CFLs.** The share of CFL shelf space ranges from 13 to 46 percent, depending on the type of store, or between 3 and 28 linear feet of display space. Membership club stores have the highest share of bulb space dedicated to CFLs. National hardware chains and franchises have the lowest share—but this is likely because they have the most diverse bulb stock. National hardware chains, in particular, devote the largest shelf space to CFLs. Mass merchandise chains and regional hardware chains comprise over 50 percent of the CFL shelf space for the region. These findings suggest that retailers' CFL displays for the most part are an integral part of their lighting displays, an indicator of the continued transformation of the lighting market.

- **Twister-style bulbs are the most predominantly stocked CFL bulb type, accounting for 44 percent of all models observed and with 92 percent of stores surveyed carrying at least one twister model. In contrast, the next most popular CFL bulb type (reflector bulbs) accounted for less than 10 percent of the models observed, and is carried by less than half the surveyed stores.** These results are consistent with other markets in the nation with active lighting programs, reflecting supplier response to consumer preferences for small bulbs that fit into many popular lamp fixtures. Twister style bulbs are open-configuration bulbs that are cheaper to produce than closed-style bulbs, like the incandescent-style bulbs that are also produced but are more expensive and far less available at the retail level.

The remaining bulb types, with the exception of two-tube and spot CFLs, are stocked by between 30 and 45 percent of stores. Most bulb styles are readily available in a range of wattages, from 5 to over 25 Watts. Just over one-third (36%) of twister models are in the 13 to 15 watt range, which typically replace 60-watt incandescent bulbs. Further potential remains to expand the diversity of product available on a per store basis and across stores, particularly across bulb styles.

These results were found to be statistically significantly different by state, with Oregon maintaining the most diversity of bulbs, followed by Washington, Montana and then Idaho.

- **Almost all (88 percent) of the CFL bulbs on retailer shelves are ENERGY STAR labeled.** The main predictor of whether a CFL is ENERGY STAR labeled is its style. Fully 93 percent of twisters are ENERGY STAR, while only 10 percent of replacement pin and circline bulbs are.<sup>27</sup> These results provide insight into the consumer finding that the ENERGY STAR label is not very influential. Since almost all CFLs are labeled as such, it may not be much of a distinguishing mark.
- **Chain hardware and mass merchandise stores account for nearly three-quarters of the shelf space dedicated to CFLs in the region.** Independent stores and drug and grocery stores account for a very small percentage of the shelf space. These results are consistent on a per-store basis, with independents and drug and grocery store displays one-quarter the size of national chain store displays (5 versus over 20 square feet). Bulb diversity trends by store type are also similar.

These results suggest that rural areas of the territory (where consumers rely on drug and grocery stores and independent hardware stores for lighting purchases) have fewer choices when it comes to CFL purchases. These results correlate with consumer findings that CFL awareness and purchase rates are much lower in rural areas as compared to nonrural areas.

- **On average across all models, CFLs cost about \$7.50, with 5- to 12-Watt twister bulbs costing the least at about \$5 each.** Currently, rebates are not impacting prices.

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<sup>27</sup> These bulb styles predated the ENERGY STAR designation, and, as such, the ENERGY STAR criteria do not include pin-based bulbs. There are some circline bulbs, however, that are screw-in, and we found many of these that are ENERGY STAR labeled.



But in the fall, during the ENERGY STAR Change a Light promotion, we might expect to see a greater impact on price from rebates. Club membership chain stores offer the lowest prices (\$2 for twister and \$4 for incandescent style CFLs). Chain hardware stores offer the highest prices, and they also offer the greatest diversity and number of styles and models.

- **CFL prices have fallen by nearly half from 1998, when the Alliance last collected CFL price data from retail stores.** In 1997, prices ranged from \$14 to \$27, and one year later had fallen to between \$13 and \$16. This result reflects the cumulative results of the Alliance's manufacturer buydown in the late 1990s and retailer support over the last 5 years, local utility incentive programs, and maturation of the CFL market in general.
- **Region wide, there are few ENERGY STAR lighting fixture displays, with an average of 1.5 models per store.** Among stores that carry ENERGY STAR fixtures (30 percent), the average is 4.5. Most of these models are mounted fixtures, with table lamps and torchieres comprising a tiny percentage of models. The national chain hardware stores account for most of the diversity of product, with an average of 11 fixture models. These results suggest there is vast potential in the ENERGY STAR fixture market.

### ***Retailer Survey***

Retailer survey results represent feedback from store-level representatives, which were contacted by the Alliance's field representatives during their periodic store visits.

- **Retailer store representatives perceive that 2005 sales may be higher than 2004 sales.** These results may indicate that meeting the Alliance's sales goals for 2005 is achievable from retailers' perspectives. These results differed for chains versus independents, with chains predicting more robust future sales than independents. There are also regional differences with respect to sales forecasts, with areas that have been less likely to have had increased sales from 2003 to 2005 (Montana and Idaho) more likely to expect greater sales increases in 2005 and the reverse for the other states that have experienced larger recent sales increases.
- **Retailers at the store level seem to have leveled out in the diversity of their CFL bulb stock.** While there have been major gains over the few years, retailers at the store level do not expect to see future large increases because they perceive they have limited shelf and warehouse space to deal with larger varieties. These results suggest that they feel they are meeting consumers' needs with regard to providing a wide array of product. Consumer results corroborate this assertion since product availability and selection were not significant barriers to purchase. However, as the market becomes further transformed, there may be raised expectations among consumers for more product lines, including a wide array of dimmable and three-way CFLs, products of which consumers are not widely aware and retailers are not widely stocking.



- **Trends for fixtures are similar to CFL bulb trends**, with an expectation of greater sales in 2005. Stocking may continue to increase for fixtures, as compared to leveling off for bulbs since there are so few varieties stocked at most stores. In general, chains feel more positive about next year's outlook for fixture sales and stocking than independents. Likewise, Montana and Idaho retailers expect greater increases in sales (where they have not had as much of an increase in sales in the past) and the reverse for Washington and Oregon retailers.
- **About half of retailers attempt to stock only ENERGY STAR-rated CFLs.** More independent stores do so than chain stores. About one-quarter accepts whatever the manufacturer/distributor provides, while a few stores (mostly national chains) report that stocking decisions are made at the corporate office.
- **According to retailers, CFL price is the most significant barrier to increasing CFL sales.** The next most important barrier is awareness, and then customer attitudes about CFL products. These results correspond to the consumer results, suggesting that retailers are well informed about consumer behaviors and perceptions.
- **Retailers report that saving energy and reducing the electricity bill is the most significant driver of CFL sales.** Again, these results are similar to consumer results, proving that retailers are well aware of consumer motivations.

## 9.2 CLOTHES WASHER PRODUCT CONCLUSIONS

### 9.2.1 *Progress Towards Meeting Market Progress Indicators*

- **Maintain the Northwest's lead over the national average market share for ENERGY STAR clothes washers.** The Alliance has met its ENERGY STAR clothes washer market share goal for 2004, with regional shares exceeding national shares by 10 percentage points.
- **Achieve annual market share for UHE clothes washers (modified energy factor >1.8) of at least 50 percent of all ENERGY STAR clothes washers by 2007.** The project has achieved ultra-high-efficiency (UHE) clothes washer market shares (of ENERGY STAR clothes washer sales) of 39 percent during the spring appliance promotion, and these shares may increase in 2005 with an increase in use of tiered rebates. The Alliance may consider alternative methods for expanding its collection of data related to UHE market shares, in order to more definitively track its progress towards 50 percent UHE market shares by 2007.
- **Facilitate adoption of the higher efficiency MEF level (1.8) as the 2007 ENERGY STAR specification.** The Alliance is achieving market participation in accepting UHE clothes washers, paving the way for the 2007 ENERGY STAR specification change. The Consortium for Energy Efficiency (CEE) added support to the Alliance efforts in December 2004 when it adopted 1.8 MEF as its level for Tier 1 Clothes Washers, effective January 2007. Further research with clothes washer market actors such as ENERGY STAR representatives and clothes washer manufacturers to support MPER2

will help establish the project's impact and effectiveness of its efforts in influencing the 2007 specification. At the retailer level, store managers overwhelmingly value the ENERGY STAR brand and do not feel there are any significant barriers to increasing sales of ENERGY STAR and UHE clothes washers. With regard to retail salespeople, most of the units shown to shoppers are ENERGY STAR – and about one-quarter are UHE clothes washers. The benefits of UHE clothes washers are routinely discussed with shoppers, including water and energy savings and non-energy/water benefits such as clothes dryer savings. Finally, utilities are supporting sales specifically of UHE clothes washer, with more than half of consumers in the region being offered a two tiered rebate, encouraging consumers to go beyond the ENERGY STAR qualification and purchase UHE units. Likewise, the state of Oregon has developed a tiered tax credit to encourage ENERGY STAR and UHE clothes washer purchases among its residents.

The retailer, utility and state actions in turn reach consumers in the form of education and incentives that increase awareness and provide the motivation (incentives) and trigger (in the form of product availability and exposure) to encourage acceptance of UHE clothes washers.

### **9.2.2 Product Sales and Market Share Assessment**

- **The Alliance has met its clothes washer goal for 2004, with regional shares exceeding national shares by 10 percentage points.** The region is comparable to the national average shares for all appliances except for clothes washers, where the region exceeds the national shares by 12 percent (with shares of 38 percent).
- **The project has achieved ultra-high-efficiency (UHE) clothes washer market shares (of ENERGY STAR clothes washer sales) of 39 percent during the spring appliance promotion, and these shares may increase in 2005 with an increase in use of tiered rebates.** The Alliance may consider alternative methods for expanding its collection of data related to UHE market shares, in order to more definitively track its progress towards 50 percent UHE market shares by 2007.

### **9.2.3 Appliance Survey Results**

#### ***Retailer Survey***

As mentioned above, retailer survey results represent feedback from store-level representatives.

- **Retailers unanimously value the ENERGY STAR brand in their efforts to market and sell appliances.** Upwards of two-thirds of retailers believe that their salespeople discuss ENERGY STAR qualifications or benefits with their customers. National chains are more likely to value the ENERGY STAR brand than independent stores. Likewise, Oregon and Washington stores are more likely to value the brand than Montana and Idaho stores, even once store type is taken into account.
- **Retailers are less likely to believe that the ENERGY STAR brand is important to consumers than they are to value the brand themselves.** The mystery shopper

survey results may explain this result (discussed below), in that salespeople tend to discuss the benefits of ENERGY STAR appliances as opposed to using the brand itself to promote high-efficiency products.

- **Retailers feel that salespeople are the main drivers of ENERGY STAR appliance sales.** The next most important driver of such sales is saving energy/reducing electricity bill, followed by the availability of rebates. Perceived drivers of UHE clothes washer sales specifically are similar to appliances in general, except that salesperson influence is believed to be much less important.
- **Retailers believe that customers are most concerned with initial cost of clothes washers, followed by water usage, rebate availability, and then energy usage.** Very few believe that the ENERGY STAR label is one of the major attributes customers look for. This result is consistent with mystery shopper survey results, which, as mentioned above, show that salespeople tend to mention the benefits of high-efficiency clothes washers (reduced water and energy usage) as opposed to promoting the brand itself.
- **Retailers report few barriers to sales of ENERGY STAR appliances.** Retailers expect to see continued increases in ENERGY STAR appliance sales and do not foresee any barriers in meeting those expectations.

### ***Mystery Shopper Survey***

Mystery shopper surveys were conducted by KEMA staff posing as a shopper in the market for a new clothes washer. Shoppers were trained to appear neutral with regard to preference for an energy efficient model. Data were collected on the specific models promoted as well as the salesperson's knowledge of energy efficiency.

- **Most (81 percent) of the units shown to clothes washer shoppers were ENERGY STAR units. Few (24 percent) units were UHE clothes washers.** ENERGY STAR models are often among the higher priced models, with features including those that are associated with energy efficiency bundled at the higher end. Mystery shopper results shed light on this result, with most salespeople showing shoppers five models—one UHE model (the top of the line, most expensive), three ENERGY STAR models (moderate to high priced with high-end features), and one base or inexpensive model. Salespeople tend to push the ENERGY STAR and UHE models since they lead to higher commissions. But there is always an expectation among salespeople that some set percentage of consumers is interested in price only.
- **Salespeople tend to promote the benefits of ENERGY STAR and UHE clothes washers, rather than promoting the ENERGY STAR brand itself.** For almost all the ENERGY STAR models shown to shoppers in our sample, retailers almost always touted (unprompted) the water savings and energy efficiency of the models. Most also mentioned the lower detergent requirements and dryer savings. The ENERGY STAR label was only mentioned 7 percent of the time, even though 81 percent of units were labeled as such.

- **Salespeople showed a high degree of knowledge regarding the energy and water savings attributes of ENERGY STAR clothes washers.** They were far less knowledgeable about the technical specifications associated with ENERGY STAR washers, including the modified energy factor. However, as stated above, UHE clothes washers are marketed as the highest end washers, with the most features, the highest water and energy efficiency, and as the superior product.
- **Rebates are promoted for most, but not all, ENERGY STAR washers.** However, in areas where utilities are less likely to run programs (e.g., Montana and Idaho), the Spring into a World of Savings promotion is hardly promoted. Likewise, salespeople in independent stores are less likely to mention the promotion versus national chains even when region is taken into account.

### **Consumer Survey**

The Double-Your-Savings consumer survey gathered information on the decision-making process from participants in the spring 2004 ENERGY STAR clothes washer promotion.

- **ENERGY STAR clothes washer purchaser influences align with salesperson promotional pitches,** with electricity and water savings the most important influences. Note that these results are of rebate recipients only. These results suggest that salespeople understand consumers' a priori concerns and motivations and use the most effective sales pitch for increasing sales of ENERGY STAR clothes washers.

## **9.3 PROJECT PROCESS RESULTS**

### **9.3.1 Lighting Retailers**

- **Lighting retailers find the project tools to be less helpful than appliance retailers.** While overall helpfulness and specific project tool usefulness ratings were still positive, it is clear that lighting retailers actively promote CFLs via their own signage and promotions, relying less on the Change a Light promotion and project-supplied POP. Retailers reported that first cost and lack of awareness were the major barriers with respect to increasing their sales of CFLs, suggesting that the Alliance and local utilities might increase their focus on addressing these barriers to increase the project's effectiveness in supporting retailers.
- **The degree to which retailers value the different project components varies by store type and utility territory.** Figure 7-9 displays the differences and provides insight into the elements most favored by region as well as store type.
- **More retailers are expecting to run utility sponsored rebate promotions next year than most other types of promotions.** Conservation goals for the smaller utilities are expected to be increased in the coming year, and many utilities expect rebate offerings to increase in response.

- **Appliance retailers are making some use of POP merchandising materials.** At least one ENERGY STAR point of purchase merchandising material (e.g., door decals, flyers/brochures, shelf signs, product labels, and banners) was present in 86% of stores visited in the mystery shopper survey.
- **Retailers would benefit from more advance notice to participate in promotions.**

### 9.3.2 *Appliance Retailers*

- **Appliance retailers increasingly find the project to be helpful,** with combined very and somewhat helpful ratings increasing from 85 to 98 percent from 2001 to 2005.
- **The field representative's support is regarded by both appliance and lighting retailers as the most useful project tool,** with about every retailer in the sample giving a 4 or a 5 rating on a scale from 1 to 5, with 5 meaning very useful. ENERGY STAR POP and salesperson training are the next most useful tools, with upwards of three-quarters of appliance retailers giving a 4 or 5 rating. Lighting retailers also valued POP and salesperson training, but with 4 or 5 ratings from over half of the lighting retailers. The other program tools are also valued and include brochures, coordination between retailers and utility incentives, and cooperative marketing.
- **The degree to which retailers value the project is impacted by their geographic location, store type, and utility territory.** Table 7-2 displays the values placed on each element of the project for two regional and two store type groupings.
- **Participation in the 2004 DYS promotion was strongest in Washington and Oregon.** Washington and Oregon retailers participated in the DYS promotion at much higher levels (near 90 percent) than Montana and Idaho stores (around 20 percent). The 2004 participation levels (63%) were close to the 2003 levels (56%). The promotion was viewed as very successful by most retailers in increasing sales of ENERGY STAR clothes washers, with the same regional differences in sales increases seen as evidenced by the varied participation levels.
- **Less than half of retailers are presently using POP to sell ENERGY STAR clothes washers.**
- **Retailers would benefit from more advance notice to participate in promotions.**

### 9.3.3 *Utilities*

- **Awareness of the project's services is universally high among large and investor-owned utilities, with a significant portion (35 percent) of small utilities unaware.** Many of the unaware small utilities are among the smallest in the region, with no staff dedicated to providing energy-efficiency programs and services.
- **Utilities clearly value the services of the utility coordinator and field representative,** with around 80 percent rating the overall value excellent or good. Use of these services varies by utility size, with larger utilities engaging the services more often than smaller utilities. Use of these services has declined over time,

particularly with respect to the utility coordinator. Smaller and medium-sized utilities requested more contact with the coordinator. With respect to the field representative, increased coordination between retailers and utilities were the most frequently cited suggestions for improving the service.

- **Use of and satisfaction with the northwestenergystar.com web site is high, with larger utilities using it the most.** Utilities likewise place a high value on the web site compared to other services, with nearly one-third ranking it as the most valuable service. Generally, most of the utilities' comments about the site were favorable, noting the added content and ease of use improvements. Larger utilities suggested the need for additional, technically focused content, while medium and smaller utilities noted a need for more customer-service-oriented tools. In addition, while the majority of utilities are comfortable with the web site, they still see a need to be able to easily download, print out, and store important documents and materials.
- **Participation in conference calls is most common among large and medium-sized utilities,** whereas smaller utilities do not participate as often due to time constraints or lack of need (no programs). The calls provide a valuable forum for discussing issues surrounding existing programs and for sharing ideas when starting new programs.
- **Marketing services provided by the Alliance are valued and used most frequently by medium-sized utilities,** whereas larger utilities value the services provided by the Alliance but perform much of their own outreach and promotion. Suggestions for improvement from large utilities include additional cobranding and cooperative efforts, medium utilities want additional support from field representatives, and small utilities would like to receive additional materials for their outreach efforts.
- **Utilities favorably rated the overall value of the services they receive from the Alliance in terms of staff, information, outreach support, and promotional support.** Ratings did not differ dramatically across utility sizes, indicating that Alliance services—to the extent that they are used by different sized utilities—are generally meeting needs across the board. Utilities suggested areas the Alliance should focus future efforts, with the most frequent being consumer education, market actor support, sales support, and public relations.

## 9.4 COST-EFFECTIVENESS RESULTS

### 9.4.1 Lighting

- **The measure cost assumption for 2005 of \$3 may be overstated based on the current shelf survey results.** The prior evaluation recommended that the Alliance continue to use the \$5 cost assumption that was used prior to 2005. The lighting shelf survey data do not necessarily support a lower measure cost for CFLs, however these data are not be representative of what is purchased. In order to use these data to understand the average price paid by consumers, sales weights would need to be developed and applied.



- **Exterior CFL take-back may be too high** – with at least one other local source suggesting interior and exterior take-back are the same and are 5 percent or less.
- **Long-term forecasts of CFL sales may be overstated, unless the project is successful in expanding the purchaser base to continue the recent trends in sales increases.** As stated earlier in this section, current purchasers may reach a purchase limit that will impact growth in sales unless non-purchasers begin buying CFLs. Future consumer research, specifically with non-purchasers, and the next round of project planning should both inform a reevaluation of the long-term forecast.
- **The model's assumptions of baseline sales may be understated, given the market momentum that has been gained over the past decade through other utility and national stakeholder efforts.** At the very least, the model should build in some rate of increase in baseline sales, rather than assuming flat sales year after year.

#### 9.4.2 UHE Clothes Washers

- **The assumed number of wash loads per household may too high, leading to an overstatement of energy and water savings.** The model assumes that each home washes 352 loads per year, but other studies conducted in the region and California suggest the true value is less than 300.
- **Incremental measure cost assumptions for UHE clothes washers may be too low.** Currently, the model assumes incremental measure cost of \$80, while other industry estimates are much higher. The project might consider requesting the detailed work papers underlying these other industry estimates to determine the extent to which feature parity has been addressed, which would help to determine the validity of the higher estimates.
- **Similar to the lighting model, the assumptions of baseline sales of UHE clothes washers may be understated.** Given that federal standards and the ENERGY STAR specification will be increased in 2007, the natural market acceptance of higher efficiency clothes washers will improve as manufacturers increase the efficiency of their product lines. At the very least, the model should build in some rate of increase in the percentage of baseline sales, rather than assuming a flat percentage (3%) year after year.

### 9.5 RECOMMENDATIONS

We have organized the recommendations by lighting market, appliance market, and project process improvements.

### 9.5.1 Lighting Market

- **Improve CFL Sales tracking.** CFL sales for the grocery and drug store channel, which are not currently systematically tracked, should somehow be included more comprehensively in the future as this channel becomes more active.
- **Modify the project's CFL replacement metric to more explicitly focus on consumer satisfaction with CFL quality.** Track the percentage of CFL removals among current CFL users, along with future intentions to replace burnt-out CFLs with new CFLs in order to monitor CFL user satisfaction.
- **Raise consumer CFL awareness.** Inactive local utilities should be encouraged to implement CFL programs that at minimum inform their customers of CFLs (e.g., via bill stuffers) to raise awareness among nonshoppers. The Alliance already supports its member utilities and is uniquely positioned to provide this encouragement.
- **Address non-purchasing aware consumers.** The consumer survey results show that a large percentage (33%) of the region's population is already aware of CFLs but has not purchased them. We suggest that the Alliance conduct follow-up research to determine the specific barriers that face non-purchasers, as prior consumer surveys focused mostly on purchasers. The next phase consumer survey could be tailored to focus on non-purchasers, since purchasers have been found to be positively positioned with regard to future CFL purchases.
- **Continue to support lighting retailers' sales efforts and utility lighting incentive programs.** While the previous recommendation points out that recent consumer lighting research in the Northwest has focused on CFL purchasers, aware non-purchasers were surveyed regarding their stated reasons for not purchasing to-date, and initial cost was found to be the primary barrier. Likewise, having received a CFL coupon was found to be one of the primary drivers of CFL purchases. The Alliance has sponsored projects over the past 5 years that have supported upstream incentives, manufacturer support, and midstream retailer interventions to encourage promotion of CFLs. Likewise, local utilities in the region have sponsored incentive programs that have targeted both retailers and consumers. These market interventions have worked together to educate consumers on the benefits of CFLs (via retailer promotions) and reduce their cost (via incentives). Some combination of these activities should be continued to encourage nonpurchasers to buy CFLs in order to meet the Alliance's long-term CFL market share objective. With CFLs priced at an average of \$7.50 each (during nonpromotion periods), clearly there is a need to lower the retail price if the Alliance expects to meet long-term CFL sales objectives.
- **Continue to support CFL quality initiatives.** CFL satisfaction is a primary driver of future purchase intentions and, as such, product quality should be monitored to ensure current purchasers continue purchasing CFLs. Over the past several years, the Alliance and other nationwide stakeholders have worked with ENERGY STAR to set, enforce, and monitor the quality of CFLs sold in retail channels through the Program for the Evaluation and Analysis of Residential Lighting (PEARL). While these efforts



have probably helped to improve the quality of products being sold today, there are still issues with regard to product performance and consumer perception of CFLs. There is likely the need for stakeholders to continue in some way to provide oversight of product quality. The Department of Energy's proposed ENERGY STAR third-party testing and verification process may help to fill this gap.

- **Do not rely on ENERGY STAR branding for consumer marketing of CFLs.** The ENERGY STAR label is not a driver of CFL sales. It is best that the project continue to support the ENERGY STAR program's Change a Light campaign and other efforts to increase product quality, but there is little evidence that the brand itself is effective in marketing CFLs to consumers. Most of the CFLs being marketed by retailers are ENERGY STAR labeled, which suggests that retailers and/or manufacturers understand that these CFLs are of higher quality and in the long term better for sales. It follows that very few consumers are being influenced to purchase CFLs due to the label since it is no longer a distinguishing characteristic among CFLs.
- **Continue to support suppliers in expanding CFL bulb diversity.** There remains the potential for expanding the diversity of product within most stores and across stores, particularly for bulb style (wattage diversity is fairly good). Twister-style bulbs are the predominant bulb style, which consumers tend to like and manufacturers have successfully produced on a large scale at lower prices. Product availability and diversity are not presently significant barriers on the consumer side, and it follows that retailers are not planning on increasing the variety of their CFL stock in the short term. However, to truly transform the market, CFL versions of all standard light bulb styles must be readily available at most stores that stock lighting.
- **Attempt to focus field representative support on stores and in regions that value the services the most and could benefit most from the support.** These stores and areas are generally independent stores and stores in Montana and Idaho, who have high hopes of increasing sales in the coming year and highly value the project's services. National chain stores and stores in particular in Oregon and Washington often run their own promotions and do not benefit as much from this aspect of the project's services.

### 9.5.2 *Appliance Market*

- **Expand the project's tracking of UHE market shares.** Attempt to obtain data on the MEF of all ENERGY STAR clothes washer sales from a sample of retailers across the year. These data may then be compared with UHE market shares during the promotion for the sample. An adjustment factor may be created to annualize the more complete set of MEF data that is collected during the promotion by the Alliance's implementation contractor, PECI, as part of its involvement in implementing local utility incentive programs. The Alliance and PECI may utilize its existing relationship with major retailers to solicit data from a sample of the most active retailers. This type of data sharing in exchange for marketing and promotional support has worked in this and other regions in the past.

- **Continue to focus on providing salespeople with information and other tools to sell ENERGY STAR appliances**, since they drive purchase decisions. Retailer services should be designed with the understanding that salespeople tend to promote ENERGY STAR products by touting their benefits, not by using the brand. The technical specifications of ENERGY STAR and UHE clothes washers in particular are beyond most salespersons' grasps, but that does not seem to be an issue in their ability to sell ENERGY STAR products by knowledgeably discussing their benefits.
- **Increase the project's focus on stores and areas where it has not been as effective in affecting market change.** Independent stores and stores in Montana and Idaho have lower market shares and have had less success with the project. Since they highly value the field representative, who visits independent stores the least frequently (around once per quarter), there may be benefits associated with increasing the frequency of visits to these stores.

### 9.5.3 Project Process Improvements

#### *Retailers*

- **Provide advance notice of upcoming promotions by e-mail or otherwise.** Track retailer initial interest and final participation levels to help determine the appropriate advance notice. Consider a bi-annual newsletter to all retailers with schedules of planned events, evaluation findings, and goals for the year to help them more clearly understand the Alliance efforts.
- **Review the services that retailers receive with regard to the Change a Light program and identify ways to improve participation rates.** Some retailers felt that while the promotion drew interest, it did not impact sales much. Providing more advertising, marketing materials and merchandising support, along with leveraging utility incentive efforts that reduce the retailer price, would address some retailers' concerns with the promotion.

#### *Utilities*

- **Consider tailoring project communication strategies to reach more small utilities:**
  - Create a bi-annual newsletter that is targeted towards the small utilities and any medium-sized utilities that are known to have little or no project activity. Focus the newsletter on the issues facing these smaller utilities and provide ways that they can get involved that are more manageable for them. Provide schedule or upcoming promotions and other Alliance-coordinated services. Mail the newsletter instead of (or as well as) sending it by e-mail to help differentiate it.
  - Offer an e-mail service that is less frequent than the current E-Newsletter and target the information for smaller utilities. Offer this as a separate subscription option so that users are not overwhelmed with too much information. Many of the

smallest utilities do not have time to participate in conference calls or read the e-mail notices, so a less frequent, targeted service would help to improve information flow to them and they might be more likely to read about the items that are more likely to be of interest.

- Offer a conference call focused on smaller utilities or those who do not have much activity and identify how the Alliance can help them and how they can obtain additional information to help their constituents. Offer the call less frequently than the current conference calls (once a quarter or twice a year) and keep them to 1 hour maximum.
- **Clarify to stakeholders what services the utility coordinator provides and promote the contact to help broaden exposure to the services.** In the past, much of the information dissemination had to be done manually so that contact had to be more controlled. Because more and more of the materials are available on the web site, leveraging the staff member to increase exposure among utilities and get them pointed in the right direction can increase usage of the other more self-service project offerings. Send out a notice to all small and mid-sized utilities outlining the various support service roles and who to call for what. Highlight the improved information available on the web site as an introduction to get utilities to take a fresh look at the site so they use the coordinator as a second tier for questions
- **Continue active coordination with utilities.** Create some trade show or other project support materials that promote the northwestenergystar.com web site now that it has more consumer-based information. Continue to build the consumer resources so that utilities refer customers to the site.
- **Work with Bonneville to understand program guidelines and implications those might have on the market.** Determine how best to use the Alliance resources to support Bonneville members as they navigate any new rules and try to decide what programs to implement at their utilities.
- **Use utility comments noted throughout the process evaluation to include an “Evaluation Feedback” corner in the E-Newsletter.** This will help address some questions that utilities brought up but will also let those who posed the questions know that the Alliance is listening to their concerns.

### **Web Site**

- **Use the feedback provided in the web site discussion section of the web site to refine the site and increase offerings.** A sample of the recommendations include:
  - Update product fact sheets to enhance the quality of the technical information and add more detailed discussion about issues like lighting.
  - Post “Date Updated” information on pages with regularly changing information like the list of qualifying ENERGY STAR models or otherwise highlight new items.

- Post an Excel version of the ENERGY STAR qualifying model list.

### ***Retailers and Utilities***

- **Provide more advance notice of promotions to retailers and utilities.** Coordinate advance notice by e-mail and alert both retailers and utilities at the same time.
- **Consider strategies to increase the level of coordination between utilities and retailers.** While retailers rank coordination with utilities near the bottom of their list, utilities would like to have more involvement in the project efforts in their retail community. Consider ways to increase utility involvement opportunities so that utilities see the value of the project efforts and improve their connections with retailers. To avoid retailer backlash, do not add restrictions, forms, or other requirements that complicate the process.
  - Develop a more proactive way for field representatives to notify utility staff when they are in a utility's service area and to alert them of activities taking place with local retailers.
  - Use field representatives to draw utilities into the visit with local retailers. Utilities wish they were more involved in the process, and retailers cite diminishing coordination. Field representatives should notify utilities when they plan to be in the service territory and jointly visit retailers, if possible. A communication link between the three parties should be established via an e-mail notice of the pending visit or other coordinated activity.
  - Create friendly competition among lighting retailers that regularly promote CFLs by showcasing ongoing retailer promotions. Include this information in a regular retailer communication piece as well as through field representatives. Promote utility project participation and help educate utilities on the steps they need to take to create a bulb program if they do not have one in place now.

#### ***9.5.4 Cost-Effectiveness Model Improvements***

### ***Lighting***

- **Attempt to collect CFL sales data by product type** in order to sales weight measure cost data for the lighting model. This will facilitate the development of a sales weighted measure cost value.
- **Collect a small sample of CFL price data during the fall promotion.** This activity will facilitate the development of an annualized measure cost data. The lighting shelf inventory data that are presented in this report are off-promotion price data, which may overstate retail price.
- **Develop a method to more accurately determine CFL measure cost.** At present, the only available data on CFL measure cost are the shelf inventory survey data. As mentioned previously, these data are not sales weighted. We recommend that the

project team leverage the CFL sales data that it obtains from retailers to develop sales weights at least at the bulb style level.

- **Revisit the rationale for a different and higher (versus interior) exterior CFL take-back value.** The higher exterior value may not be justified.
- **Incorporate the next round of consumer survey results (e.g., those that focus on non-purchaser future CFL purchase intentions) and future Alliance project and local utility program plans into a reevaluation of the long-term CFL sales forecasts.**
- **Build a rate of increase in baseline sales into the model's long-term estimates, as currently it assumes flat levels of sales.** While there may be no perfect method available to break out Alliance-influenced sales from all other sales (baseline, local utility, etc.), a starting point would be to estimate sales for a region of the nation with no active local programs. This type of exercise has been conducted over the last several years in the Northeast in order to directly estimate utility program net effects. These estimates could be applied to the Northwest on a per person basis, and a trend could be estimated based on the change in sales in these inactive regions over the past few years.

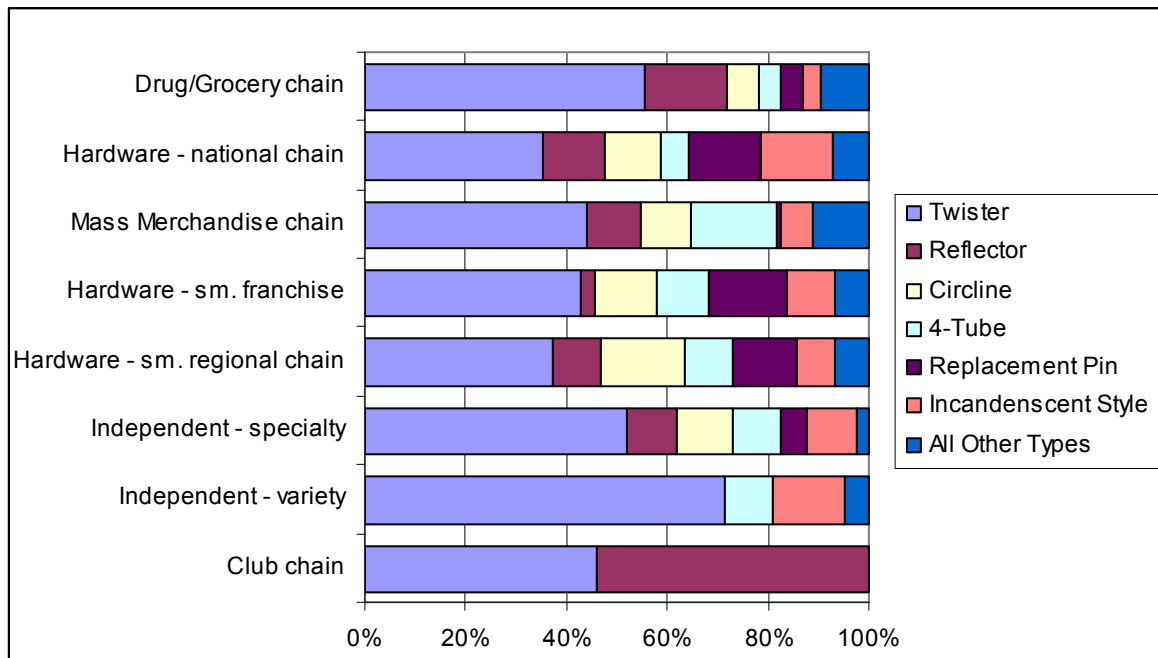
### ***UHE Clothes Washers***

- **Lower the number of wash loads per household from 352 to 275 loads,** which is equal to a recent RASS survey estimate from a large Northwest utility, or develop a justification for use of the higher value.
- **Revisit the incremental measure cost assumption for UHE clothes washers, since it is likely too low.**
- **Update the model's long-term assumptions of baseline sales to account for the market effects of the 2007 standards and ENERGY STAR specification changes.** While the Alliance supported the 2007 standards, that support probably does not justify assuming flat baseline sales for the next decade or longer. Baseline sales should increase starting in 2007, as a reflection of market change independent of Alliance activities.

**Table A-1**  
**Percentage of Total Bulb Models Stocked by Bulb Style and Store Type**

Store Type	Bulb Style										N (Models )
	Twister	Reflector	Circline	4-Tube	Replacement Pin	Incandescent Style	Globe	2-Tube	Spot	Other	
Club chain	46%	54%	-	-	-	-	-	-	-	-	13
Independent - variety	71%	-	-	10%	-	14%	5%	-	-	-	21
Independent - specialty	52%	10%	11%	10%	5%	10%	1%	-	1%	-	81
Hardware - sm. regional chain	37%	10%	16%	10%	13%	7%	3%	2%	1%	-	134
Hardware - sm. franchise	43%	3%	12%	10%	16%	9%	2%	3%	2%	-	173
Mass Merchandise chain	44%	11%	10%	17%	1%	6%	6%	2%	3%	-	179
Hardware - national chain	35%	13%	11%	5%	14%	14%	5%	1%	-	1%	182
Drug/Grocery chain	55%	16%	6%	5%	4%	4%	4%	3%	2%	1%	191
Total / Overall	45%	11%	10%	9%	9%	8%	4%	2%	2%	-	974

**Figure A-1**  
**Percentage of Total Bulb Models Stocked by Bulb Style and Store Type<sup>28</sup>**



Twister style bulbs were present in at least half (and as many as 100 percent) of all stores within each store type, or 92 percent of stores overall. No other bulb styles were present in all stores within any store type.

<sup>28</sup> Number of Models (N): Club chain N = 13; Independent – variety N = 21; Independent – specialty N = 81; Hardware - sm. regional chain N = 134; Hardware - sm. franchise N = 173; Mass Merchandise chain N = 179; Hardware - national chain N = 182; Drug/Grocery chain N = 191.

**Table A-2**  
**Percentage of Total Stores Stocking by Bulb Style and Store Type**

Store Type	Bulb Style										N (Stores)
	Twister	Incandescent Style	Reflector	4-Tube	Replacement Pin	Circline	Globe	Spot	2-Tube	Other	
Hardware - sm. regional chain	100%	57%	57%	57%	29%	57%	43%	29%	14%	-	3
Independent - variety	100%	67%	-	67%	-	-	33%	-	-	-	19
Mass Merchandise chain	100%	67%	67%	67%	22%	44%	44%	44%	22%	-	10
Drug/Grocery chain	100%	26%	37%	26%	21%	21%	26%	11%	5%	5%	13
Hardware - sm. franchise	92%	62%	31%	46%	54%	46%	23%	15%	31%	-	7
Independent - specialty	67%	33%	22%	22%	22%	11%	11%	11%	-	-	9
Hardware - national chain	60%	50%	60%	40%	50%	30%	50%	-	10%	10%	3
Club chain	50%	-	50%	-	-	-	-	-	-	-	9
Overall	92%	45%	44%	40%	30%	30%	30%	15%	12%	3%	73

**Table A-3**  
**Mean Number of CFL Brands per Store by Bulb Style and Size Category**

Style	Size Category				
	5 to 12 Watts	13 to 15 Watts	16 to 19 Watts	20 to 24 Watts	25 Watts or More
Twister	1.1	1.5	1.2	1.4	1.3
Reflector	1.0	1.4	1.0	1.4	1.3
Incandescent Style	1.2	1.1	1.0	1.0	-
Circline	-	-	1.0	1.5	1.7
Replacement Pin	1.0	1.4	1.3	1.0	1.0
2- and 4-Tube	1.0	1.3	1.0	1.3	1.3
Other	1.5	1.1	1.0	1.0	-
Total / Overall	1.6	1.9	1.6	1.7	1.8



**Table A-4**  
**Mean Number of CFL Models per Store by Bulb Style/Size Category**

Style	Size Category					N Models
	5 to 12 Watts	13 to 15 Watts	16 to 19 Watts	20 to 24 Watts	25 Watts or More	
Twister	1.3	2.4	1.5	2.0	2.0	436
2- and 4-Tube	1.4	1.3	1.0	1.8	1.9	108
Reflector	1.0	1.7	1.5	1.8	1.2	106
Circline	-	-	1.0	2.0	2.8	102
Replacement Pin	1.9	1.7	1.4	1.0	1.8	84
Incandescent Style	1.8	1.9	1.0	1.0	-	81
Other	2.0	1.5	1.0	1.0	-	57
Total / Overall	4.1	4.5	2.4	3.6	4.3	974

**Table A-5**  
**Percentage of Stores Carrying Each Style by State**

Bulb Style	State			
	Idaho	Montana	Oregon	Washington
Twister	91%	91%	100%	89%
Incandescent Style	21%	46%	72%	52%
Reflector	24%	21%	52%	48%
4-Tube	29%	47%	72%	44%
Circline	0%	0%	53%	44%
Replacement Pin	16%	65%	43%	27%
Globe	4%	27%	59%	29%
Spot	0%	0%	49%	20%
2-Tube	25%	0%	19%	5%
Other	0%	11%	9%	0%
Number of stores	15	6	13	39

**Table A-6**  
**Percentage of Models by Style by State**

Bulb Style	State			
	Idaho	Montana	Oregon	Washington
Twister	63%	36%	41%	41%
Incandescent Style	9%	8%	7%	8%
Reflector	9%	5%	13%	10%
4-Tube	11%	10%	10%	13%
Circline	0%	0%	13%	13%
Replacement Pin	3%	33%	4%	9%
Globe	1%	6%	5%	3%
Spot	0%	0%	4%	2%
2-Tube	5%	0%	2%	0%
Other	0%	2%	0%	0%
Number of models observed	136	51	212	575